
DRAFT EIS PUBLIC COMMENT LETTERS

----- Forwarded message -----

From: **Jean Public** <jeanpublic1@yahoo.com>

Date: Wed, Jun 17, 2015 at 6:54 AM

Subject: Fw: public comment from your letter oof march 202,2015 received today june 16, 2015
- strang ehov your mail is here 4 months late

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

----- Forwarded Message -----

From: Jean Public <jeanpublic1@yahoo.com>

To: "blm_wo_vegeis@lm.gov" <blm_wo_vegeis@lm.gov>; "americanvoices@mail.house.gov" <americanvoices@mail.house.gov>; "info@foodandwateracton.org" <info@foodandwateracton.org>; "information@sierraclub.org" <information@sierraclub.org>; "scoop@huffingtonpost.com" <scoop@huffingtonpost.com>; "vicepresident@whitehouse.gov" <vicepresident@whitehouse.gov>; "gina.ramos@blm.gov" <gina.ramos@blm.gov>

Sent: Tuesday, June 16, 2015 7:48 PM

Subject: public comment from your letter oof march 202,2015 received today june 16, 2015 -
strang ehov your mail is here 4 months late

I oppose all use of aminopyralid, fluroxypyr and rimsulfuron

Aminopyralid is a selective herbicide used for control of broadleaf weeds, especially thistles and clovers. It is in the picolinic acid family of herbicides, which also includes clopyralid, picloram, triclopyr, and several less common herbicides.^{[2][3]} It was first registered for use in 2005, in the USA under the brand name "Milestone".^[4] and in the UK under the brand names Banish, Forefront, Halcyon, Pharaoh, Pro-Banish, Runway, Synero, and Upfront.

Aminopyralid is of concern to vegetable growers, as it can enter the food chain via manure, which contains long-lasting residues of the herbicide. It affects potatoes, tomatoes, and beans, causing deformed plants, and poor or non-existent yields. Problems with manure contaminated with aminopyralid residue surfaced in the UK in June and July 2008, and, at the end of July 2008, Dow AgroSciences implemented an immediate suspension of UK sales and use of herbicides containing aminopyralid.^[5]



Tomato plant affected by aminopyralid herbicide residue from contaminated manure, grown July 2008, Cheshire, UK. Note tightly curled leaves, which is a symptom of aminopyralid contamination.

Approval of aminopyralid was subsequently reinstated in the UK on October 6, 2009, as reported by the UK regulatory authority, the Advisory Committee on Pesticides.^[6] The re-introduction was approved "with new recommendations and a stringent stewardship programme devised to prevent inadvertent movement of manure from farms".^{[7]:22}

Despite restrictions, symptoms of aminopyralid damage were recorded on crops growing in allotments in Edinburgh, UK as recently as June 2010; enquiries traced the source of contamination to a farm supplying hay to the stables from where bags of manure had been obtained. Symptoms of aminopyralid injury to vegetable crops were reported by small farmers and gardeners in Britain in July 2011.^[8] [Environmental Consequences, Social and Economic Values – 01-01]

References[edit]

- Jump up** [^] Aminopyralid - Compound Summary, PubChem.

as to fluroxypyr - is horrible

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply when weather conditions favor drift or runoff from treated areas as this product may be hazardous to aquatic organisms and non-target plants. Do not contaminate water when disposing of equipment wash waters. Do not allow sprays to drift onto adjacent desirable plants.

rimsulfuron

Rimsulfuron

25 DF

Dry Flowable Herbicide

For weed control along Roadsides and Highway Medians, at Industrial Plant Sites and Utility Substations, and in Warm Season Turf
Contains rimsulfuron, the active ingredient used in TranXit

®. Quali-Pro

Rimsulfuron 25 DF is not manufactured or distributed by DuPont
TM.

ACTIVE INGREDIENT % BY WT.

Rimsulfuron: N-((4,6-dimethoxypyrimidin-2-yl)aminocarbonyl)-3-(ethylsulfonyl)-2-pyridinesulfonamide 25.0%

OTHER INGREDIENTS

. 75.0%

TOTAL 100.0%

EPA Reg. No. 66222-184 EPA Est. No. 61842-CA-001

AF

EPA Est. No. 67545-AZ-001

GM

Letter(s) in lot number correspond(s) to superscript in EPA Est. No.

KEEP OUT OF REACH OF CHILDREN

CAUTION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail).

For additional precautionary, handling, and use statements, see inside of this booklet. Manufactured for:

Makhteshim Agan of North America, Inc.

3120 Highwoods Blvd, Suite 100 - Raleigh, NC 27604

FIRST AID

IF IN EYES:

Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes; then continue rinsing eye. Call a poison control center or doctor for treatment advice.

IF ON SKIN OR

CLOTHING:

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF

SWALLOWED:

Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

IF INHALED:

Move person to fresh air. If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact Prosar at 1-877-250-9291 for emergency medical treatment information.

12914

noen of these product should be uased on nature or earth. they kill. they are designed to kil. why dont you guys just drink it instead? save us alot of money and time. this comment is for the public ream ashamed that you want to desroy mother earth in american govt. please receipt.

jean publii jeanpublic1@gmail.com

Net Contents: 15 Ounces

----- Forwarded message -----

DOCUMENT #02

From: **Scott Chamberlain** <scott.d.chamberlain@gmail.com>

Date: Fri, Jun 26, 2015 at 2:57 PM

Subject: Herbicides

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

I am all in favor of using the herbicides proposed.

Scott Chamberlain
106 Cochise Drive
Hailey Idaho

Sent from my iPhone

----- Forwarded message -----

DOCUMENT #03

From: **Janelle Eklund** <jeklund@cvinternet.net>

Date: Sat, Jun 27, 2015 at 10:55 AM

Subject: Herbicides public comment

To: blm_wo_vegeis@blm.gov

To Whom it May Concern,

This comment is about the three new herbicides BLM is wanting to use to control noxious weeds on public lands.

Please DO NOT use any herbicides to control what you call “noxious weeds”. We have already learned from other herbicides that we are just killing ourselves but we seem to never learn from our mistakes. For example it is proven that Roundup also kills many crop plants along with the 'pesky weeds'. So the solution was to use genetic modification (GM) technology to create plants that would withstand the poisons of Roundup. Nature fought back and now we are inundated with super weeds and super bugs, resistant to these poisonous herbicides. [\[Alternatives, Introduction – 03-01\]](#)

Now the chemical companies have come up with yet other toxic poisons to control 'weeds'. When will we ever learn?

Truth be known, most broadleaf plants are not weeds nor are they noxious. “This castigation befell many of them because their presence disturbed the homogenous tableaux of turf grasses in suburban lawns even while many of them benefitted lawns, gardens, and pastures such as the clover family, which fixes nitrogen, attracts pollinators, and supports the soil food web. Many of them are also beneficial to us, nutritionally speaking. Some so-called weeds contain ten to one hundred times the nutrition of modern lettuces and green vegetables. [\[Proposed Action and Purpose and Need, Purpose and Need for the Proposed Action – 03-02\]](#) Further, aminopyralid is of concern to vegetable growers, as it can enter the food chain via manure, which contains long-lasting residues of the herbicide. Its sale has been suspended in various parts of the world, but that has not stopped instances of contamination from continuing to crop up in those countries. Such suspensions have generally been short-lived, as regulatory bodies merely impose a ‘strict program of stewardship,’ which theoretically protects the public from these poisons... The chemical arms race, has no endpoint other than mutually assured destruction (MAD).” (Article by John Moody, Herbicides from Hell: The Next Generation, Weston A. Price Foundation Wise Traditions, Spring 2015)

The article also says that aminopyralid can end up in gardens through manure, compost (municipal or farm-made), straw and hay. It and several others are some of the worst of a host of next-generation herbicides. All must be avoided but aminopyralid is a growers nightmare. If a grower is certified organic they will immediately lose their certification for three or more years. Growers, thinking they are doing right by getting municipal compost find out it is fatal later. Use of herbicides can destroy a farm's or homesteads future for many years. [\[Environmental Consequences, Social and Economic Values – 03-03\]](#) And what does it do to the health of

humans? When it gets in the food chain we are sure to ingest the very poisons we lace the plants with. Why do we have so many health issues? It's a no-brainer. [Environmental Consequences, Human Health and Safety – 03-04]

Don't think of weeds as weeds. I have studied wild plants and herbs and know they have many nutritional and medicinal uses. Our society is too focused on getting rid of that which we are ignorant about and do not want to take the time to learn about. Take a lesson from the plants.

Please DO NOT use any herbicides anywhere! [Proposed Action and Purpose and Need, Purpose and Need for the Proposed Action – 03-05] Thank you.

Sincerely,

Janelle Eklund

Copper Center, Alaska

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DOCUMENT #04

From: **Mike Vandeman** <mjvande@pacbell.net>

Date: Sun, Jun 28, 2015 at 12:01 PM

Subject: Please use NO pesticides!

To: blm_wo_vegeis@blm.gov

Humans aren't smart enough to make safe chemicals. Manual control is relatively harmless, and guaranteed to work. [Proposed Action and Purpose and Need, Scope of Analysis – 04-01]

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I am working on creating wildlife habitat that is off-limits to humans ("pure habitat").
Want to help? (I spent the previous 8 years fighting auto dependence and road construction.)

Wildlife must be given top priority, because they can't protect themselves from us.

Please don't put a cell phone next to any part of your body that you are fond of!

<http://mjvande.nfshost.com>

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DOCUMENT #05

From: **Richard LaCasse** <rlacasse777@gmail.com>

Date: Thu, Jul 2, 2015 at 6:07 PM

Subject: Comments on the use of 3 additional herbicides on BLM public lands

To: blm_wo_vegeis@blm.gov

I support the use of herbicides on public lands, it's an important tool to keep in your toolbox if done correctly. I also support adding the 3 new herbicides, Milestone, Vista, and Matrix or their generic counterparts. I have had personal experience with Milestone and believe it to be an important addition to the mixture of triclopyr and clopyralid in controlling Mesquite, an undesirable brush species on southwestern public lands.

The use of herbicides, using procedures set up by the BLM where applicators must be educated and certified, ensures that their application is done with the utmost consideration to the environment. In addition improvement projects using herbicides are must less damaging to the environment than the alternatives of cultural, mechanical, and fire and probably more predictable than biological control. The use of herbicides is also more economical than many of the alternatives.

The addition of these 3 new herbicides can only improve the quality of projects involving the control of noxious weeds but also undesirable vegetation with the goal of increasing plant community diversity and a whole plethora of other effects that benefit the existing environment. In some cases, herbicides may be the only reasonable alternative with any chance at success at meeting your objectives.

Private industry has been using these three herbicide for years with great success. Please add these three herbicides to your list of approved herbicides as soon as possible.

Thanks for the opportunity to comment, sincerely

Richard G. LaCasse
Natural Resource Consultant
3723 Lucky Lindy Ln
Las Cruces, NM 88007
rlacasse777@gmail.com
575-644-8982

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DOCUMENT #06

From: **Laura Scalet** <scaletla@gmail.com>

Date: Mon, Jul 6, 2015 at 1:28 PM

Subject: none

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

Please direct all governing related issues to the Department of Native American Affairs

----- Forwarded message -----

DOCUMENT #07

From: **Jeffrey Pettingill** <JPettingill@co.bonneville.id.us>

Date: Tue, Jul 7, 2015 at 8:15 AM

Subject: Aminopyralid, Fluroxypyr and Rimsulfuron on BLM Lands in 17 Western States

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

Cc: "Brusseau, Trent (TA)" <TABrusseau@dow.com>, "Mike Bisciegia (Mike.Bisciegia@Bayer.com)" <Mike.Bisciegia@bayer.com>, "Kent L. Pittard (Kent.Pittard@Bayer.com)" <Kent.Pittard@bayer.com>, "Peterson, Vanelle (VF)" <VFPeterson@dow.com>, john franson <jfranson@wecon.com>, aaron greenwell <aarong@bannockcounty.us>, "Aaron Hull (aaronhfcw@gmail.com)" <aaronhfcw@gmail.com>, "amartinson@latah.id.us" <amartinson@latah.id.us>, "bcweed007@aol.com" <bcweed007@aol.com>, "beborn@uidaho.edu" <beborn@uidaho.edu>, "bfowler@co.fremont.id.us" <bfowler@co.fremont.id.us>, Bill Hargrave <bhargrave@kcgov.us>, Bo Billman <clarkweeds@mudlake.net>, "Bonnie Davis (bdavis@co.washington.id.us)" <bdavis@co.washington.id.us>, "Brad Bluemer (bbluemer@bonnercountyid.gov)" <bbluemer@bonnercountyid.gov>, "Brad Gamett (buttoweeds@atcnet.net)" <buttoweeds@atcnet.net>, "Brian Clapp (bclapp@custertel.net)" <bclapp@custertel.net>, "Carol Young (cyoung@co.shoshone.id.us)" <cyoung@co.shoshone.id.us>, "ccrabbtree@idahocounty.org" <ccrabbtree@idahocounty.org>, Chip Haight <chaight@lewiscounty.id.org>, "Chip Haight (chaight@lewiscountyid.org)" <chaight@lewiscountyid.org>, "cmunk@co.power.id.us" <cmunk@co.power.id.us>, "Curtis Bennett (Interim/ also is R&B Supervisor) (cbennett@co.valley.id.us)" <cbennett@co.valley.id.us>, "Dave Humphreys (elmore@uidaho.edu)" <elmore@uidaho.edu>, "dennyw@cebridge.net" <dennyw@cebridge.net>, Duke <tguthrie@boundarycountyid.org>, "ewells@tcweed.org" <ewells@tcweed.org>, "Garrett Hess - Oneida County Weed Control (Garrett.e.hess@outlook.com)" <Garrett.e.hess@outlook.com>, "gordon@uidaho.edu" <gordon@uidaho.edu>, Jake Wyant <gcwc@qwestoffice.net>, jmartell <jmartell@canyoncounty.org>, Jeffrey Pettingill <JPettingill@co.bonneville.id.us>, "kali@co.twin-falls.id.us" <kali@co.twin-falls.id.us>, Mark Ridinger <markr@co.nezperce.id.us>, "mbottoms@co.boise.id.us" <mbottoms@co.boise.id.us>, "mcweedrs@pmt.org" <mcweedrs@pmt.org>, "Mitch Whitmill (mwhitmill@co.jefferson.id.us)" <mwhitmill@co.jefferson.id.us>, Owyhee County Weed <ociweeds@gmail.com>, "pmuirbrook@co.bingham.id.us" <pmuirbrook@co.bingham.id.us>, "Scott Watson (swatson@payettecounty.org)" <swatson@payettecounty.org>, "tcwc1@sbcglobal.net" <tcwc1@sbcglobal.net>, "Terry Lee (Camascreek1@frontier.com)" <Camascreek1@frontier.com>, "Terry Ruby (tcc83330@yahoo.com)" <tcc83330@yahoo.com>, "Todd Transtrum (toddtranstrum@gmail.com)" <toddtranstrum@gmail.com>, "Tony Pozenel (tpozenel@co.madison.id.us)" <tpozenel@co.madison.id.us>, "weeds@co.adams.id.us" <weeds@co.adams.id.us>, "wpwilbbk@adaweb.net" <wpwilbbk@adaweb.net>

To whom it may concern,

I am writing to you in support of the use of three very important herbicides to be utilized on Bureau of Land Management properties in 17 Western states. These herbicide will greatly compliment the portfolio of herbicides already utilized by the BLM.

First, we at Bonneville County Weed have been utilizing Aminopyralid since it was introduced many years ago. It has added quality weed control for some very difficult to control species such as Spotted knapweed, Russian knapweed, Canada thistle, Musk thistle, and Houndstongue, to name a few. This product gives us excellent control of these noxious weeds, yet reduces off-target damage as found with other herbicides. We utilize this product where we want increased bio-diversity of plant types as well as quality reduction of impacts from the invasive plants. Utilizing this product with its low use rate offers greater applicator safety, decreases the amount of pesticide into the environment, and allows the use of the product in diverse situations such as along waterways, riparian zones, as well as range and pasture areas.

Secondly, Fluroxypyr is one of the greatest herbicides that is utilized for resistance weed management for invasive annual and biennial weeds. These weeds are the weeds that first invade a disturbed area and increase fire hazard and reduce establishment of new seeding situations. As these weeds are very aggressive and prolific seeders and resistance to common place herbicides has become an issue. Fortunately fluroxypyr is a chemistry that can break the cycle of these plants, offers quality weed control, as well as is valuable at protecting the surrounding vegetation.

Finally, Rimsulfuron offers the quality of control of annual grasses such as Downey brome and Medusahead rye. We know that we are losing Sage grouse habitat due to the increase in fires caused by these annual grasses. Rimsulfuron offers consistant control of annual grasses when followed-up with revegetation of desirable species the following spring. We have utilized rimsulfuron in many areas and have not seen noticeable damage to forage and shrub species that are extremely valuable to native plants and animals.

Once again, I encourage the BLM and other federal agencies to add Aminopyralid, Fluroxypyr, and Rimsulfuron to their portfolio of quality invasive weed control herbicides. These herbicides add quality of control as well as decreased off-target damage to other species when used according to their federal label. Please do not hesitate to contact me should you have any questions or comments on this issue.

Jeffrey Pettingill, Bonneville County Weed Superintendent

Bonneville County Weed Control

Billing: 605 N. Capital, Idaho Falls, ID, 83402-5151

Shipping: 2700 Manwill Ave, Idaho Falls, ID 83402

208-529-1397 office

208-529-1398 fax

208-589-9920 mobile

jpettingill@co.bonneville.id.us

"When dealing with Invasive Species, our failures are obvious, our successes are Invisible!" Dr. Rich Old



<http://www.co.bonneville.id.us/index.php/weed-department>



103 Francisco de Avondo
Socorro, NM 87801

July 16, 2015

DOCUMENT #08 -

**Ms. Gina Ramos
PEIS Project Manager
Bureau of Land Management
1849 C Street NW
Room 2134 LM, WO-220
Washington, DC 20240**

Dear Ms. Ramos

The New Mexico Vegetation Management Association fully supports the addition of aminopyralid, fluroxypyr and rimsulfuron to the Bureau of Land Management's eighteen approved herbicide active ingredients to assist in the management of their 80 million acres. The addition of these herbicides will aid in best management of vegetation on the land managed by the Bureau of Land Management.

Sincerely,

A handwritten signature in cursive script, appearing to read "Eddy Williams".

Eddy Williams
President

----- Forwarded message -----

DOCUMENT #09

From: **Celestine Duncan** <weeds1@mt.net>

Date: Wed, Jul 15, 2015 at 11:21 AM

Subject: PEIS for vegetation treatments

To: blm_wo_vegeis@blm.gov

RE: BLM Draft Programmatic Environmental Impact Statement (PEIS) for Vegetation Treatments Using Aminopyralid, Fluroxypyr and Rimsulfuron on BLM Lands in 17 Western States.

To Bureau of Land Management

The purpose of this email to **support Alternative B** to allow for the use of aminopyralid, rimsulfuron and fluroxypyr on BLM lands. Following are some advantages these herbicides will provide to BLM for invasive plant control:

1. Will help reduce the spread of noxious weed and other invasive plants including cheatgrass (*Bromus tectorum*).
2. Reduce the potential for catastrophic wildfires caused by cheatgrass; and help rehabilitate sites impacted by fire
3. Restore and protect native plant communities
4. Reduce loss of wildlife habitat from weeds such as spotted knapweed, biennial and perennial thistles, Rush skeletonweed, yellow starthistle, other widespread noxious weeds as well as newly invading species
5. Provide more flexibility for invasive plant management since aminopyralid can be applied to waters edge, is a reduced risk herbicide, and can be applied to seasonally dry wetlands.
6. Provide increased efficacy on some noxious weeds (e.g. Russian knapweed, invasive hawkweeds, cheatgrass) compared to range and pasture herbicides that are currently allowed on BLM lands.

I have worked in invasive plant management for more than 30 years and believe these new herbicides will improve management of invasive plants on BLM lands. If you have any questions please contact me.

Best regards,

Celestine

Celestine Duncan, WMS

PO Box 1385

Helena, MT 59624

406-443-1469 o/ 406-431-0264 cell

weeds1@mt.net

----- Forwarded message -----

DOCUMENT #10

From: **Jim Free** <jcfree2@msn.com>

Date: Thu, Jul 16, 2015 at 8:49 AM

Subject: Herbicide Approval

To: blm_wo_vegeis@blm.gov

to whom it may concern

Herbicide approval for Milestone and others similar products need to be moved forward and approved for use on USDI lands. This has been approved for use on National Forest Lands USDA for years with no environmental effects. The tax payers are not being served by having the USDI do the same study with the same results. It is costing the managers undo expense in managing invasive species do to poor decision making at the upper level of government. The spread of invasive species on BLM and Parks is resulting in millions of dollars in loss of habitat and native vegetation. The cost to treat is way beyond any reason for delaying risk assessment work for this many years. This lack of decision making is what gives our agencies a bad name and add fuels to the fire that the federal government is inept in managing lands and the states should take it over. Please make a decision even if it is wrong. **[Proposed Action and Purpose and Need, Purpose and Need for the Proposed Action – 10-01]** thanks Jim

Jim Free

14920 6000 Road

Montrose, CO 81403

cell 970-275-0752

jcfree2@msn.com

----- Forwarded message -----

DOCUMENT #11

From: **Thomas, Terry** <terry.thomas@idfg.idaho.gov>

Date: Thu, Jul 16, 2015 at 10:27 AM

Subject: noxious weed EIS

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

I support using the chemicals listed on BLM lands to control noxious weeds. While I recognize the drawbacks of using chemicals, after 29 years managing for wildlife, I also fully understand the impacts of noxious weeds on habitat and rangeland condition. I find the invasion of noxious weeds to be the greater evil.

Thank you for the opportunity to comment.

Terry Thomas

Regional Habitat Manager

Idaho Department of Fish and Game

Upper Snake Region

4279 Commerce Circle

Idaho Falls, ID 83401

(208)525-7290

(208)390-0610 (cell)

terry.thomas@idfg.idaho.gov

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DOCUMENT #12

From: **Barb Eller** <ellerb@hughes.net>

Date: Thu, Jul 16, 2015 at 12:03 PM

Subject: Comment EIS Herbicide use

To: blm_wo_vegeis@blm.gov

Herbicides and their degradates are now commonly found in ground and surface waters.

[Environmental Consequences, Water Resources and Quality – 12-01] There is no data on the long-term human and ecology effects of mixtures of multiple herbicides. [Environmental Consequences, Herbicide Effects Analysis – 12-02] Attention must be directed to the nonchemical management of weeds. [Proposed Action and Purpose and Need, Scope of Analysis – 12-03]

Barbara Eller
Eller Family Farm

218-839-4489

----- Forwarded message -----

DOCUMENT #13

From: **Aaron Foster** <afoster@wyoming.com>
Date: Tue, Jul 21, 2015 at 10:21 AM
Subject: Comments on Draft EIS for Aminopyralid
To: blm_wo_vegeis@blm.gov

Comments on - Draft Programmatic Environmental Impact Statement Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States

To Whom it May Concern:

The BLM administers millions of acres in central Wyoming where infestations of Russian knapweed, diffuse knapweed, spotted knapweed, and other invasive species are causing harm to the natural sagebrush steppe ecosystem. The Fremont County Weed and Pest District highly supports the use of Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM lands. These active ingredients will add safe and effective alternatives to the current standards. In addition, these ingredients are more selective and have the potential to reduce the non-target effects seen from the traditional standard herbicides. Approval of the use of Aminopyralid has been highly anticipated for the last 5 or more years. This is a much needed tool for invasive species managers working on BLM lands.

Sincerely,

Aaron Foster, Supervisor

Fremont County Weed & Pest District

307-332-1052

[Sign up for FCWP News!](#)

<http://www.fcwp.org/>

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DOCUMENT #14

From: **Doug Heiken** <dh@oregonwild.org>

Date: Tue, Jul 21, 2015 at 5:23 PM

Subject: Comments on BLM's Draft Programmatic Environmental Impact Statement Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States

To: blm_wo_vegeis@blm.gov

FROM: Doug Heiken, Oregon Wild | PO Box 11648, Eugene, OR 97440 | 541-344-0675 | dh@oregonwild.org

TO: BLM

VIA: blm_wo_vegeis@blm.gov

ATTN: Stuart Paulus

DATE: 21 July 2015

RE: Comments on BLM's Draft Programmatic Environmental Impact Statement Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States

Please accept the following comments from Oregon Wild regarding BLM's Draft Programmatic Environmental Impact Statement Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States. <http://www.gpo.gov/fdsys/pkg/FR-2015-06-19/pdf/2015-15118.pdf> Oregon Wild represents approximately 15,000 members and supporters who share our mission to protect and restore Oregon's wildlands, wildlife and waters as an enduring legacy.

Oregon Wild does not object to judicious use of herbicides to control high-priority infestations of non-native weeds on public lands, but we do not want widespread chemical use to be used to cover up the ecological damage caused by weed-spreading activities such as livestock grazing, logging, mining, OHVs, fire-suppression etc.

Applying toxic chemicals containing under-tested active ingredients and undisclosed and untested inert ingredients should be avoided as much as possible and used only as a last resort.

Executive Order 13112 of February 3, 1999 requires BLM to focus first on prevention of the spread of invasive species such as noxious weeds. BLM should therefore first focus on weed prevention, which means:

- Avoid and minimize the most common weed vectors, such as livestock and OHVs;
- Avoid and minimize soil disturbance caused by logging, road construction, grazing, OHVs, fuel reduction, fire-suppression, firewood gathering, mining, etc.

- Avoid and minimize disturbance of healthy native vegetation cover caused by logging, road construction, grazing, OHVs, fuel reduction, fire-suppression, firewood gathering, mining, etc., including maintain forest canopy cover that helps suppress weeds.

BLM should prioritize conservation activities that help avoid the establishment and spread of weeds thus minimizing the need for, and use of, chemical herbicides. BLM must therefore minimize disturbance of soil and native vegetation caused by livestock grazing, logging, yarding, log hauling, road work, OHVs, mining, etc. [Alternatives, Introduction – 14-01]

BLM should disclose all ingredients (including so-called inert ingredients) included in the herbicides it intends to use and BLM should disclose the health and environmental effects of all those ingredients singly and in combination. [Environmental Consequences, Herbicide Effects Analysis – 14-02]

BLM should fully disclose the effects of herbicides on adults, children, and pregnant women. [Environmental Consequences, Human Health and Safety – 14-03]

BLM should provide reasonable and timely public notification before applying herbicides. [Alternatives, Coordination and Education – 14-04]

Please review the previous comments submitted on behalf of Oregon Wild on BLM's previous EIS to expand chemical use on public lands.

We are opposed to aerial application of chemicals because it indicates (and essentially rewards) a large-scale failure of prevention efforts, and because aerial application is non-discriminate. Too many non-target resources (including ecological important native plants) will be impacted. [Alternatives, Alternative C – No Aerial Application of New Herbicides – 14-05]

Sincerely,
/s/

Doug Heiken, Oregon Wild
PO Box 11648, Eugene OR 97440
dh@oregonwild.org, 541.344.0675

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SAGEBRUSH SEA CAMPAIGN

2224 W. PALOMINO DRIVE
CHANDLER, ARIZONA 85224
WWW.SAGEBRUSHSEA.ORG

July 30, 2007

Brian Amme
EIS Project Manager
Bureau of Land Management
Nevada State Office
P.O. Box 12000
Reno, Nevada 89520-0006

Re: Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement; Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western State Programmatic Environment Report

Dear Mr. Amme:

Please accept the following and attachments as comments on the Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS) and Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environment Report (PER). These comments also incorporate our comments dated February 10, 2006, and submitted on the Draft Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement and Draft Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report.

1. The PEIS claims the “primary issue of controversy” for NEPA review, as identified through scoping, was the BLM’s continued and proposed use of herbicides on public lands (PEIS I: 1-13). The BLM subsequently determined that NEPA review was not required to assess the impacts of non-herbicide treatment activities at the national programmatic level (PEIS I: 1-13), even though the agency’s Scoping Comment Summary Report for the Vegetation Treatments Programmatic Environmental Impact Statement maintained that the proposed environmental impact statement (EIS) would “[u]tilize a variety of techniques, including prescribed fire, herbicides, biological and cultural control agents, and mechanical and manual means, as part of an integrated vegetation management program” and “[r]estore habitats to conserve multiple species of plants and animals, with priority given to special status species and wetland and riparian habitats” (Scoping Report: 1-1). We disagree that the primary issues of controversy identified through scoping were limited to herbicide use. Forty-three conservation, native vegetation, sporting, and Native American organizations representing hundreds of thousands of members and supporters endorsed comments urging the BLM to address the *causes* of weed invasion and fire fuel density and consider preventative, passive and active (non-herbicide) treatments to control nonnative plants and reduce fire fuel density on public lands. We note that comments focused on “addressing the causes rather than ...

symptoms” only trailed “reduce or eliminate the use of herbicides; apply from the ground rather than the air” in the number of scoping comments received by BLM on the proposed EIS. Organizations and individuals who urged the Bureau of Land Management (BLM) to consider the causes of the spread of invasive species and fire fuel density are not “a narrow focus interest group” and represent a significant portion of the concerned public (*see* PEIS III: III-32).

2. The BLM’s development of separate PEIS and PER documents constitutes “segmentation,” which is disallowed under the National Environmental Policy Act (NEPA). Regulations promulgated by the Council on Environmental Quality (CEQ) state that an agency should analyze “connected actions,” “cumulative actions,” and “similar actions” in a single EIS (40 C.F.R. § 1508.25(a)). “Connected actions” are those that automatically trigger other actions that may require an environmental impact statement (EIS), cannot proceed unless other actions are taken previously or simultaneously, or are interdependent parts of a larger action and depend on the larger action for justification. “Cumulative actions” are those that when viewed with other actions proposed by the agency have cumulatively significant impacts and therefore should be discussed in the same EIS. “Similar actions” are those that when viewed with other reasonably foreseeable or proposed agency actions have similarities that provide a basis for evaluating their environmental impacts together, such as common timing or geography (*see* 40 C.F.R. § 1508.25(a)). CEQ’s regulations are directed at avoiding improper segmentation, wherein the significance of the environmental impacts of an action as a whole would not be evident if the action were to be broken into component parts and the impact of those parts analyzed separately. For a multitude of reasons presented in these comments and previous comments by the Restore Native Ecosystems Coalition (American Lands Alliance) (RNEA) and others, the BLM should combine its analysis of herbicide and non-herbicide vegetation treatments into a single EIS. Indeed, the BLM’s own definition of segmentation as applied to vegetation management suggests that the current organization and proposed implementation of the PEIS and PER (via a multitude of regional and activity management plans) constitutes segmentation. (“In the context of vegetation treatments, segmentation would take the form of analyzing and approving multiple contiguous smaller treatment projects derived from larger-based proposal” (PEIS III: III-101).) A significant amount of research attests to the importance of comparing the effectiveness of passive and active restoration treatments, herbicide use and other management techniques to control invasive species.¹ It is also important to analyze combinations of preventative, passive, active, herbicidal and non-herbicidal treatments on invasive species spread and fire fuel density. As the Wyoming Game and Fish Department commented, “in 50 to 100 or more years ... passive actions [implemented in conjunction with other treatments] may make a large difference in terms of the effectiveness of the treatments and reducing in management costs associated with treatment re-entry” (PEIS III: III-253).

3. In both the PEIS and PER, the BLM contends that federal law and policy, including the Federal Land Policy and Management Act (FLPMA), prohibits the agency from restricting or

¹ *E.g.*, T. D. Whitson and D. W. Koch. 1998. Control of downy brome (*Bromus tectorum*) with herbicides and perennial grass competition. *Weed Tech.* 12(2): 391-396 (indicating that replacing noncompetitive annual grasses with competitive cool-season perennial grasses will provide a longer term solution to a cheatgrass problem that the use of herbicides alone or with intensive grazing).

limiting an approved land use, such as livestock grazing, to prevent or control the spread of invasive species (*see, e.g.*, PEIS III: III-102; PEIS III: III-87, “[e]limination or curtailment of uses completely from public lands, such as described in the Restore Native Ecosystem[s] alternative ... is contrary to numerous statutes and regulations, and outside the scope of analysis of the PEIS”). However, the agency admits that “grazing practices may be adjusted to meet resource goals and objectives” (PEIS III: III-108) and recent scholarship suggests that laws such as FLPMA require BLM to restrict or limit grazing wherever necessary to prevent “unnecessary and undue degradation” (i.e., the spread of invasive weeds) on public lands² (Attachment I). The BLM acknowledged its authority under FLPMA “to take any action necessary to prevent unnecessary or undue degradation of lands” (PER: I-6).

4. The BLM should analyze the PER under NEPA (if it is to remain a separate document from the DEIS, which it should not). Environmental impact statements and records of decisions in the late 1980s and early 1990s (PER: I-7) analyzed the consequences of non-herbicide vegetation treatments on 500,000 acres in 14 western states (PER: I-2). The PER describes annual treatments on approximately 6 million acres annually in 17 western states (PER: ES-1). Such an enormous expansion of the BLM vegetation management program, particularly when considered with the more than three-fold increase in proposed herbicide applications (from 300,000 to 932,000 acres annually (PEIS I: ES-1), requires that the agency produce a new environmental impact statement (EIS) to assess all reasonable alternatives and the impacts of preventing and treating unwanted vegetation on 6 million acres of public lands per year.
5. The BLM contends that it is not required to analyze non-herbicide treatments under NEPA because the agency was directed by the President and Congress in the Healthy Forests Restoration Act of 2003 and other policies to “take more aggressive actions to reduce catastrophic wildfire risk on public lands” (PEIS I: I-1) and such Presidential and/or Congressional directives are exempt from review under NEPA (“...the BLM has determined that additional analysis of treating these acres under non-herbicide methods in the PEIS is unnecessary. Congress and the Administration made the decision for federal agencies to treat more acres to reduce the threat of catastrophic fire” (PER: I-3).) Although specific Presidential and/or Congressional directives may be exempt from NEPA, the Healthy Forests Restoration Act described only broad parameters for a vegetation management program on public lands, capped the total federal acreage that may be treated at 20,000,000 acres annually, and otherwise required federal agencies to plan hazardous fuel reduction projects in accordance with NEPA (Public Law 108-148). For reasons stated elsewhere in these comments, we urge the BLM to conduct the required NEPA analysis of non-herbicide treatments at the programmatic level, rather than leave the task to dozens or perhaps hundreds of regional and local activity plans.
6. The RNEA is a “reasonable” alternative under NEPA and should have been analyzed by the BLM as an integrated strategy to manage invasive weeds and fire fuel density on public land.

² D. Donahue. 2007. Federal rangeland policy: perverting law and jeopardizing ecosystem services. *J. Land Use & Env'l Law* (in press).

7. Preventative and passive vegetation management as prescribed in the RNEA are proactive treatments for controlling invasive species, restoring native vegetation, and reducing fire fuel density on public land. The BLM agrees that prevention is the best approach for managing invasive plants (PEIS III: III-253) and “[p]assive restoration is a valid technique” for vegetation management (PEIS III: III-101). BLM cannot avoid analyzing these techniques simply because they do not meet a traditional definition of vegetation “treatments.” (“Passive treatments, by inherent definition, are not considered to be treatments that manipulate vegetation...” (PEIS III: III-224, 225).)
8. In response to comments on the draft PEIS, the BLM claims that it has a successful strategy in place to address the spread of invasive weeds (PEIS III: III-89) and that “individual states, such as Nevada, have developed state-wide strategies based on the BLM model, which have demonstrated success at reducing infestations and restoring land health across the West” (PEIS III: III-90). The rapid spread of invasive weeds on public lands (the PEIS/PER notes that invasive weeds are spreading on BLM lands at a rate of 2,300 acres per day) is evidence that current BLM programs are not working to control invasive weeds on public lands. Cheatgrass, an invasive plant perpetuated by livestock grazing and wildfire,³ is now the dominant species on 100 million acres – 158,000 square miles – in the Intermountain West.⁴ More than fifty percent of sagebrush steppe may be invaded to some extent by cheatgrass, with losses projected to accelerate in the future.⁵ Huge areas of sagebrush steppe in Nevada have burned in 2007 (*see local media accounts*). Nearly 80 percent of the land area in Nevada is estimated to be susceptible to cheatgrass displacement.⁶ Sagebrush occupies approximately 36 percent of Nevada, of which almost 30 percent is estimated at moderate risk and less than 15 percent at high risk of invasion by cheatgrass.⁷ Nevada is a poor

³ See E. J. Rawlings, K. K. Hanson, R. L. Sanford, J. Belnap. 1997. The striking effects of land use practices and *Bromus tectorum* invasion on phosphorous cycling in a desert ecosystem of the Colorado Plateau. *Bull. Ecological Soc'y of America* 78: 300; J. Gelbard. 1999. Multiple scale causes of exotic plant invasions in the Colorado Plateau and Great Basin, USA. M.S. thesis. Duke University, Nicholas School of the Environment. Durham, NC (cheatgrass spreads by livestock grazing); W. D. Billings. 1994. Ecological impacts of cheatgrass and resultant fire on ecosystems in the western Great Basin. Pages 22-30 in S. B. Monsen and S. G. Kitchen (eds.). PROCEEDINGS—ECOLOGY AND MANAGEMENT OF ANNUAL RANGELANDS. Gen. Tech. Rep. INT-313. USDA, Forest Service, Intermountain Research Station. Ogden, UT (cheatgrass spreads by wildfire).

⁴ Rosentreter, R. 1994. Displacement of rare plants by exotic grasses. Pages 170-175 in S. B. Monsen and S. G. Kitchen (eds.). PROCEEDINGS—ECOLOGY AND MANAGEMENT OF ANNUAL RANGELANDS. Gen. Tech. Rep. INT-313. USDA, Forest Service, Intermountain Research Station. Ogden, UT: 170 (*citing* R. Mack. 1981. Invasion of *Bromus tectorum* L. into western North America: an ecological chronicle. *Agro-Ecosystems* 7: 145-165).

⁵ Rowland, M. M. 2004. Effects of management practices on birds: Greater Sage-grouse. Northern Prairie Wildlife Research Center. Jamestown, ND. Available at Northern Prairie Wildlife Research Center Online: www.npwrc.usgs.gov/resource/literatr/grasbird/grsg/grsg.htm (ver. 12AUG2004) (*citing* N. E. West. 1999. Managing for biodiversity of rangelands. Pages 101-126 in W. W. Collins and C. O. Qualset (eds.). BIODIVERSITY IN AGROECOSYSTEMS. CRC Press. Boca Raton, FL [supporting statement that cheatgrass has invaded more than half of the sagebrush habitats] and M. A. Hemstrom, M. J. Wisdom, M. M. Rowland, et al. 2002. Sagebrush-steppe vegetation dynamics and potential for restoration in the interior Columbia Basin, USA. *Conservation Biology* 16: 1243-1255 [supporting contention that cheatgrass will continue to spread into sagebrush steppe]).

⁶ Suring, L. H., M. J. Wisdom, R. J. Tausch, R. F. Miller, M. M. Rowland, L. Schueck, C. W. Meinke. 2005. Modeling threats to sagebrush and other shrubland communities. Chap. 4 in part II: Regional assessment of habitats for species of conservation concern in the Great Basin. Pages 114-149 in M. J. Wisdom, M. M. Rowland, L. H. Suring (eds.). HABITAT THREATS IN THE SAGEBRUSH ECOSYSTEM: METHODS OF REGIONAL ASSESSMENT AND APPLICATIONS IN THE GREAT BASIN. Alliance Communications Group. Lawrence, KS: 138.

⁷ *Id.*

example of a state that is successfully managing invasive weeds. The PEIS and PER promote and build upon current strategies employed in Nevada and elsewhere, including Partners Against Weeds – An Action Plan for the BLM, which are proven to fail. This should induce the BLM to design and implement an alternative approach to invasive species and fire fuel management on public lands (such as the RNEA).

9. Although the PEIS is intended as a “broad, comprehensive background source of information” (PEIS I: 1-8) intended to make “broad assumptions on the numbers of acres to be treated annually by herbicides” (PEIS I: 1-8), the document also specifically states that herbicide treatments will increase on BLM lands, affecting approximately 932,000 acres annually (PEIS I: ES-1). If the PEIS is only intended to be a “programmatic study” (PEIS: I 1-9)—and tiered regional, field and project level NEPA documents will determine actual herbicide use on public lands—why does the PEIS authorize 932,000 acres annually for herbicide treatments (a three-fold increase over the currently authorized acreage (PEIS: ES-1))?
10. The total acreage authorized for herbicide treatments in the PEIS cannot merely be a “broad assumption” (PEIS I: 1-4) of the number of acres to be treated nationally on BLM lands annually. Important documents, such as the biological assessment and umbrella ESA Section 7 consultation (PEIS I: 1-9) rely on the 932,000-acre estimate and may be rendered invalid if more than 932,000 acres are treated with herbicides in any given year. It is also unclear how herbicide applications authorized in future tiered regional, field, and local management plans will be inventoried under the PEIS so that total acreage treated nationally does not exceed 932,000 acres in any year.
11. Analysis of the cumulative impacts of herbicide and non-herbicide vegetation treatments in the PEIS is misleading and inadequate. For example, the cumulative impacts analysis for vegetation fails to identify livestock grazing as the most important impact on rangelands in the West. Knick et al. (2005) summed that “livestock grazing over the past 140 yr is the single most important influence that has changed sagebrush habitats and influenced fire regimes throughout the Intermountain West.” Citing multiple references, the authors described myriad impacts of grazing on sagebrush steppe, including soil disturbance; reduction of native vegetation and facilitation of the spread of cheatgrass; increased shrub density; and interference with the natural fire regime.⁸ The PEIS glosses over, lumps together and garbles the various impacts of Native Peoples, early European emigrants and later settlers on rangelands, when it should have simply stated briefly and precisely that European inhabitants, in only 150-300 years, “have brought about more profound changes” to sagebrush steppe “than all those of the previous 13,000 years,” primarily through livestock grazing.⁹ Because it did not acknowledge the importance of livestock grazing on native ecosystems, the subsequent analysis of the cumulative impacts of various PEIS alternatives

⁸ Knick, S. T., A. L. Holmes, R. F. Miller. 2005. The role of fire in structuring sagebrush habitats and bird communities. Pages 63-75 in V. A. Saab and H. D. W. Powell (eds.). FIRE AND AVIAN ECOLOGY IN NORTH AMERICA. Studies in Avian Biology, no. 30. Cooper Ornithological Society. Boise, ID: 68.

⁹ West, N. E. and J. A. Young. 1999. Intermountain valleys and lower mountain slopes. Pages 256-284 in M. G. Barbour and W. D. Bilings (eds.). NORTH AMERICAN TERRESTRIAL VEGETATION. 2nd edition. Cambridge University Press. New York, NY: 259 (citing multiple sources).

on public lands is deficient and misguided. For example, if BLM recognized the long-term impacts of livestock grazing on soil and vegetation, it may conclude that the ongoing effects of grazing—including the use of livestock as “biological controls” to manage weed species—may eliminate or reduce any benefits derived from other vegetation treatments contemplated in the PEIS. The agency may also determine that passive management (e.g., removal of livestock) would do more to restore native vegetation and reduce invasive weed spread and fire fuel density than any other combination of vegetation treatments that includes continued livestock grazing (even as a biological control).

12. Greater sage-grouse (*Centrocercus urophasianus*) will not benefit from the PEIS/PER. The majority of herbicide, fire, mechanical, and biological (grazing) treatments described in the PEIS and PER are proposed on sagebrush steppe (PER, chap. 4). However, without concomitant reductions in widespread livestock grazing, off-road vehicle use, energy development and other resource use, these treatments will only serve to further fragment and eliminate sage-grouse habitat.
13. In response to a comment, the BLM stated that “[a]ll alternatives analyzed in the Draft PEIS have the capability to restore ecosystems; the [Restore Native Ecosystems] alternative is not unique in this regard, nor does it represent a best management science approach over the approach the BLM already uses” (PEIS III: III-220). We strongly disagree with this contention. The RNEA is unique because it prioritizes preventative measures and passive management (including the restriction or reduction of soil-disturbing activities, such as livestock grazing and off-road vehicle use) to manage invasive weeds and fire fuel density. It differs from all BLM alternatives because it considers a full array of preventative, passive, and active management treatments as part of a single, comprehensive, precautionary and long-term strategy to protect and restore public land and resources. The alternative is supported by the best science available on invasive species and fire fuel management (*see previous submissions, including extensive annotated bibliographies*). All of the BLM’s alternatives are intended to support and advance existing weed management strategies, which have already proven to fail.
14. BLM proposes to use tebuthiuron to thin sagebrush species (perhaps to benefit sage-grouse) (PER: 2-23, Table 2-2). New research indicates that thinning *Artemisia* species with tebuthiuron may cause increases in downy brome (cheatgrass) years after treatment.¹⁰

¹⁰ Blumenthal, D. M., U. Norton, J. D. Derner, J. D. Reeder. 2006. Long-term effects of tebuthiuron on *Bromus tectorum*. W. North Amer. Natur. 66(4): 420-425.

We expect the BLM to review these comments before publishing a record of decision on the PEIS and PER. Thank you for this opportunity to submit comments.

Sincerely,

Mark N. Salvo
Sagebrush Sea Campaign
Chandler, Arizona

on behalf of

Nicole Rosmarino, Ph.D.
Forest Guardians
Santa Fe, New Mexico

Doug Heiken
Oregon Wild
Eugene, Oregon

Joseph Vaile
Klamath-Siskiyou Wildlands Center
Ashland, Oregon

Mary O'Brien, Ph.D.
Eugene, Oregon

Anne Martin
American Lands Alliance
Washington, DC

Jan Wroncy
Eugene, Oregon

Regina Chichizola
Klamath Riverkeeper
Orleans, California

July 22, 2015

Ms. Gina Ramos
PEIS Project Manager
Bureau of Land Management
1849 C Street NW, Rm 2134 LM, W0-220
Washington, DC 20240
E-Mail: blm _ wo _ vegeis@blm.gov

DOCUMENT #15

Subject: *Draft Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS).*

Dear Ms. Ramos:

Idaho Power Company (IPC) is an investor-owned utility with a service area that covers a 24,000-square-mile area in southern Idaho and eastern Oregon and has an estimated population of 1,000,000. IPC has hundreds of rights-of-way for facilities on lands managed by the Bureau of Land Management (BLM). We are writing to express our support for the addition of the active ingredients aminopyralid, fluroxypyr, and rimsulfuron to the BLM's list of 18 approved active ingredients and integrated into the vegetation management program that was analyzed in a PEIS released in 2007.

We support the addition of aminopyralid (Milestone) as this would allow us to use it instead of the more restricted use pesticide called Tordon. Milestone has a shorter residual time in the soil than Tordon and is reported to be less harmful for applicators, livestock, and wildlife. Milestone works well on thistles and knapweeds; two species we regularly address. While rimsulfuron (Matrix) is a more expensive alternative to Plateau (an annual grass killer), it also seems to work more consistently than Plateau. Matrix is effective at treating cheatgrass and other annual grasses without killing native perennial grasses. The addition of these two chemicals would provide IPC and others with greater flexibility when treating noxious weeds and invasive plant species.

If you have questions, please contact Stacey Baczkowski at 208-388-5093 or sbaczowski@idahopower.com.

Sincerely,



Brett Dumas
Environmental Supervisor

Lincoln County Conservation District
360 Lincoln St. PO Box 445
Caliente, NV 89008
775 726-3101

"Conserving our Resources for Future Generations"

DOCUMENT #16

July 22, 2015

Bureau of Land Management (at blm_wo_vegeis@blm.gov):

Lincoln County Conservation District, located in eastern Nevada, encourages the BLM to approve potential use of all effective, EPA approved, herbicides in order to have more effective tools in the toolbox to target BLM land weed infestations. We therefore support the actions being considered in the Draft Programmatic Environmental Impact Statement for Vegetation Treatments Using Aminopyralid, Fluroxpyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States.

Lincoln County Conservation District cooperates with multiple Cooperative Weed Management Areas in our area and believes that weed management must occur across ownership boundaries to be effective. The herbicides listed in this EIS are already being used by weed management groups to good effect and we support the BLM updating their allowed herbicide use to be better able to do their part and coordinate with partners in the weed management effort in Nevada and other western states.

Sincerely,

Lee Rob Mathews
Chair, Lincoln County Conservation District

----- Forwarded message -----

DOCUMENT #17

From: **Alpers, Greg (G)** <gaalpers@dow.com>
Date: Thu, Jul 23, 2015 at 3:14 PM
Subject: PEIS Three new Actives for 17 Western States
To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

To whom it may concern;

I ask that you support Alternative B. I am very familiar with two of the actives, aminopyralid and fluroxypyr. Both bring a new "tool" for BLM land managers. I have used both with all other Federal Government Agencies as well as the NM DOT. Aminopyralid ups mesquite control by 10% over the current industry standard and well as being softer on forbs and it is a very low use rate material. One of the other benefits of aminopyralid is its control of the invasive knapweeds which are choking our riparian areas. Fluroxypyr helps control resistant species of kochia and marehail as well as being a non restricted use material for the control of cactus species. It has no soil activity which allows for rapid re-vegetation of native species.

Both of these Actives will help the BLM in NM manage for multiple use within the very successful "Restore New Mexico" program.

Thanks You

Greg Alpers

Greg Alpers

Sr. Sales Representative

Range and Pasture, Crop Protection, IVM,

PhytoGen Cottonseed

Mobile 575-626-7438

Dow AgroSciences LLC

1909 West 27th Street, Roswell, NM 88201

gaalpers@dow.com www.dowagro.com



| *Solutions for the Growing World*

7/22/2015

DOCUMENT #18

AECOM

Attention: Stuart Paulus

710 Second Ave., Suite 100

Seattle, WA 98104

Fax: 206-623-9793

Commenting on two new herbicides for approval on BLM Lands, they are aminopyralid and fluroxypyr.

- I. Aminopyralid:
 - A. Brand names are Milestone; Opensight; Chaparral; Sendero; Grazon Next HL.
 - B. Safe on native grasses
 - C. No grazing restrictions livestock and wildlife.
 - D. Controls tough noxious and invasive weeds, (example Russian and spotted Knapweed, and all the thistle complex of weeds.)
 - E. Low use rates of herbicide with high performance.
 - F. Better safety and environmental profile in comparison to other approved BLM herbicides.
 - G. Sendero gives a higher percent of control of mesquite over other approved BLM approved herbicides.
 - H. Sendero is safer on desirable brose and trees example is oak.
 - I. All of the aminopyralid herbicides products will be of a great benefit to restoring the BLM native lands of the west.
- II. Fluroxypyr:
 - A. Brand names are Vista XRT II; Surmount; and Pasturegard.
 - B. Safe on native grasses.
 - C. Vista and Pasturegard have no soil activity, makes them good for reseeding new forbs and grasses.
 - D. Excellent for controlling resistant kochia.
 - E. Surmount is the very best product for cholla and prickly pear cactus that is safe on grasses, livestock, and wildlife.

III. Both Aminopyralid and fluroxypyr are two very important herbicide tools that need to be added to the BLM herbicide list for restoring and improving the BLM Lands for the land, the wildlife and the livestock.

Thank you very much for considering the aminopyralid and fluroxypyr chemistries to be added to the BLM Lands in the west.

Sincerely,

Larry Mauldin

7/24/2015

DOCUMENT #19

AECOM

Attention: Stuart Paulus

710 Second Ave., Suite 100

Seattle, WA 98104

Fax: 206-623-9793

I would like to comment on two new herbicides for approval on BLM Lands, they are aminopyralid and fluroxypyr.

- I. Aminopyralid:
 - A. Brand names are Milestone; Opensight; Chaparral; Sendero; Grazon Next HL.
 - B. Safe on native grasses
 - C. No grazing restrictions livestock and wildlife.
 - D. Controls tough noxious and invasive weeds, (example Russian and spotted Knapweed, and all the thistle complex of weeds.)
 - E. Low use rates of herbicide with high performance.
 - F. Better safety and environmental profile in comparison to other approved BLM herbicides.
 - G. Sendero gives a higher percent of control of mesquite over other approved BLM herbicides.
 - H. Sendero is safer on desirable brose and trees example is oak.
 - I. All of the aminopyralid herbicides products will be of a great benefit to restoring the BLM native lands of the west.
- II. Fluroxypyr:
 - A. Brand names are Vista XRT II; Surmount; and Pasturegard.
 - B. Safe on native grasses.
 - C. Vista and Pasturegard have no soil activity, makes them good for reseeding new forbs and grasses.
 - D. Excellent for controlling resistant kochia.
 - E. Surmount is the very best product for cholla and prickly pear cactus that is safe on grasses, livestock, and wildlife.

III. Both Aminopyralid and fluroxypyr are two very important herbicide tools that need to be added to the BLM herbicide list for restoring and improving the BLM Lands for the land, the wildlife and the livestock.

Both actives have proven to be very effective on invasive/noxious weed control as well as troublesome annuals that are a threat to reclamation and range improvement.

Thank you very much for considering the aminopyralid and fluroxypyr chemistries to be added to the BLM Lands in the west.

Sincerely,

Mel Shumway
Wyoming



**DEPARTMENT OF AGRICULTURE
STATE OF NEW MEXICO**

**MSC 3189, Box 30005
Las Cruces, New Mexico 88003-8005
Telephone (575) 646-3007**

DOCUMENT #20

Susana Martinez
Governor

Jeff M. Witte
Secretary

July 27, 2015

AECOM
Attn. Stuart Paulus
710 Second Avenue
Suite 1000
Seattle, WA 98104

Dear Mr. Paulus:

The New Mexico Department of Agriculture (NMDA) submits the following comments in response to the Bureau of Land Management (BLM) Draft Programmatic Environmental Impact Statement (PEIS) to Evaluate the use of Herbicides on Public Lands.

Noxious weeds continue to cause negative environmental and economic impacts throughout the state of New Mexico. Local cooperative weed management areas (CWMAs) provide New Mexico a cooperative framework that allows multiple state, federal, and local agencies, as well as private citizens, to work together in managing noxious weeds in our state. The BLM has been a key player in the CWMA process statewide. NMDA commends the BLM for working to update the herbicidal tools available to them by completing the PEIS process.

NMDA is in support of alternative B proposed in the PEIS. This alternative is the only one that would add all three herbicides to the approved herbicide listing, and fully enable the BLM to effectively utilize the proposed herbicides according to their label recommendations.

In recent years Aminopyralid (Milestone), Fluroxypyr (Vista), and Rimsulfuron (Matrix) have all been proven to provide very effective control of the noxious and invasive plant species they are labeled for. All three of these products are selective herbicides, which have low application rates. These attributes lessen environmental and human health impacts.

In western states, Noxious and invasive annual grasses (Cheatgrass, Medusahead, and Buffleggrass) are adversely altering native plant communities, fire regimes, and ecosystem function. These impacts have been brought to the forefront with the potential listing of the Sage Grouse as an endangered species. Both Cheatgrass and Medusahead are blamed for Sage Grouse habitat loss. Rimsulfuron (Matrix) has been proven to provide excellent selective control of

July 27, 2015

these plants. This will give the BLM another option, besides Imazipic (Plateau), in the control of these species.

Without effective treatment, invasive/noxious weeds have the ability to outcompete native plant populations permanently altering the ecosystems they infest. In order to be effective any herbicide application program must have the most up to date and effective products available. Noxious and invasive weed control efforts by the BLM are important in preserving New Mexico's valuable native plants and the ecosystems they inhabit. The addition of these herbicides will only improve the BLM's ability to control noxious and invasive plants, and manage the lands they are responsible for.

Thank you for the opportunity to comment on this proposal. Please contact Mr. Jim Wanstall at (575) 646-2642 if you have questions about these comments.

Sincerely,

A handwritten signature in blue ink, appearing to read 'JM Witte', with a stylized flourish at the end.

Jeff M. Witte

Director/Secretary

JMW/jw

----- Forwarded message -----

DOCUMENT #21

From: **Thomas J Getts** <tjgetts@ucanr.edu>

Date: Tue, Jul 28, 2015 at 7:42 PM

Subject: Public Comment on EIS for Rimsulfuron, Aminopyrlid and Fluroxypyr

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

Dear BLM,

I was visiting with a BLM employee who manages invasive plants in northern California just last week, talking about his limited control options for scotch thistle. I was excited when I received an email from the Western Society of Weed Science informing me that the BLM was seeking public comment on this EIS. I strongly support the preferred alternative that would allow the BLM to utilize Rimsulfuron, Aminopyrlid and Fluroxypyr on their lands to manage vegetation. I think that not allowing these products to be aerial applied would partially limit their effective use, because of difficult terrain and large acreages on BLM land covered in invasive weeds. Let your land managers do their job, and give them the freedom to choose aerial applications when necessary. Allowing these herbicides to be used will provide a wider spectrum of weed control and increased selectivity to certain desirable species. Our federal employees set with the difficult task of invasive plant management could greatly benefit from access to these active ingredients. The use of these products could have beneficial ecological impacts, as well as maximizing the effectiveness of limited Federal resources.

Cheers,

Tom

Tom Getts

Weed Ecology and Cropping Systems Advisor

UC Cooperative Extension

Lassen, Modoc, Sierra, and Plumas Counties

707 Nevada St. Susanville, California 96130

tjgetts@ucanr.edu

Office: 530-251-2650

Cell: 970-481-9174

----- Forwarded message -----

DOCUMENT #22

From: **Franklin County Weed Board** <fcwb@co.franklin.wa.us>

Date: Wed, Jul 29, 2015 at 6:32 PM

Subject: comment on EIS of Aminopyrlid

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

To whom it may concern:

My name is Todd Harris. I am the lead inspector for Franklin Noxious Weed Control Board. I have several years of practice experience using Aminopyrlid products eg.(Milestone, Opensite). We have seen so much better results using Milestone as opposed to Tordon. We have additionally found Aminopyrlids to be more flexible in their application timing than what we have seen with Tordon. I have applied Milestone on Yellow Starthistle , Rush Skeltonweed, Scotch Thistle and Diffuse Knapweed with exceptional results. On the other hand, I have found Tordon to be useless if applied after mid-May in our area. Safety is another reason that the aminopyrlids are superior. Aminopyrlids have much more user friendly label. The label allows use up to the water's edge. We have more than 22000 acres of BLM land in our county. The majority of which are infested to some degree with the four species of weeds listed above. Milestone or Opensite would allow more flexibility of application timing and far greater efficacy on the main noxious weed species. I am sending my comment in hopes that you will strongly consider making Aminopyrlid chemistry a permanent tool in your tool chest for controlling noxious weeds on BLM lands.

Sincerely,

Todd Harris Lead Inspector Franklin County Noxious Weed Control



THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT

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DIRECTOR

LARRY D. VOYLES

DEPUTY DIRECTOR

TY E. GRAY



June 29, 2015

DOCUMENT #23

Gina Ramos
BLM Project Manager, Bureau of Land Management
1849 C Street NW.
Rm 2134 LM, WO-220
Washington, DC 20240

**Re: Draft Programmatic Environmental Impact Statement to Evaluate the Use of
Herbicides on Public Lands Administered by the Bureau of Land Management**

Dear Ms. Ramos:

The Arizona Game and Fish Department (Department) reviewed the Draft Programmatic Environmental Impact Statement (EIS) for Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands (BLM) in 17 western states. The Department understands the EIS is being developed to add three herbicide active ingredients available for use by the BLM on up to 932,000 acres of BLM land for noxious weed management. Currently, the BLM allows 18 herbicide active ingredients on up to 932,000 acres of BLM lands annually; these were approved for use under the Record of Decision for the 2007 Programmatic EIS.

The Department believes that the Preferred Alternative would benefit fish, wildlife, and their habitats the most, as these three herbicides are of lower risk to wildlife, fish, and other aquatic resources than many of the herbicide ingredients currently in use. The Preferred Alternative has the potential to improve the efficacy of some herbicide treatments through the use of new active ingredients, which may be more effective at managing target species than currently approved herbicides. This will provide a greater ability to improve habitat for fish and wildlife, reduce the risk of wildfire, and restore degraded ecosystems.

The Department notes that the BLM would continue to follow all applicable minimum buffer distances for aquatic habitats, as well as all Standard Operating Procedures for transport, handling, and application of herbicides. The mitigation measures specified in the 2007 Programmatic EIS (PEIS; USDO I BLM 2007a:4-92) would also apply to treatments involving these new herbicides, including applications of tank mixes that include the currently approved herbicides.

Ms. Gina Ramos - *Herbicides Use on BLM Lands*

June 24, 2015

2

The Department supports continued effectiveness and implementation monitoring for herbicide use on BLM land, which are detailed in the 2007 PEIS and are accomplished through the required Pesticide Use Proposals and Pesticide Application Records.

The Department anticipates collaborating with BLM on the use of pesticides at the project level for identifying potentially affected resources, evaluating impacts, and developing alternatives and mitigation strategies, if necessary. The Department appreciates the opportunity to provide comment on this EIS, and looks forward to future collaboration with BLM. If you have any questions regarding this letter, please contact me at aowens@azgfd.gov or 623-236-7513.

Sincerely,



Audrey Owens
Project Evaluation Program Specialist, Habitat Branch
Arizona Game and Fish Department

AGFD # M15-06190105

Stuart Paulus

DOCUMENT #24 -

710 Second Avenue, Suite 100

Seattle WA 98104

FAX: 206-623-9793³⁷⁹³

July 22nd, 2015

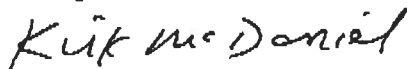
I am writing to add my support for Alternative B, "Allow for the Use of Three New Herbicides in 17 Western States on BLM owned land", in the BLM Draft PEIS. These new actives will help the BLM achieve their Multiple Use Objectives. These actives will help reduce the spread of noxious and invasive weeds and brush, reduce wildfire hazards, help restore wildlife habitat and restore native plant communities.

Aminopyralid is a low use rate material that is very active on knapweed species as well as being a key AI in Sendero, the new mesquite control material. Aminopyralid has a better toxicology and environmental profile than existing herbicides that the BLM has approved. Aminopyralid has very good native grass and forb tolerance which is especially valuable in restoration projects. Long term control of key invasive species is better with aminopyralid than some of the existing compounds.

Fluroxypyr has excellent grass tolerance over all stages of grass making it valuable in habitat improvement projects. Fluroxypyr gives equal to or better than cactus control than the existing options and has a much better environmental profile. It is also very active on species such as kochia that are resistant to the current alternatives.

These herbicides are presently widely used on nonfederal land in New Mexico and approval would help conform spraying options in our partnership programs. I ask that you approve Alternative B.

Best Regards



Dr. Kirk McDaniel

Professor Emeritus

Department of Animal and Range Sciences

New Mexico State University

Las Cruces New Mexico 88003

575-646-1191



Carlsbad Soil & Water Conservation District

3219 S. Canal, Carlsbad, N.M. 88220 ·

Phone: 575-628-1532 ·

Fax: 575-885-5386

E-Mail Address: swcd@carlsbadsoilandwater.org

July 29, 2015

DOCUMENT #25 -

AECOM

Attn: Stuart Paulus,
710 Second Avenue, Suite 1000
Seattle, WA 98104

RE: Notice of Availability of Draft Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement

To Whom It May Concern:

In reviewing the referenced Notice of Availability, the Carlsbad Soil and Water Conservation District (SWCD) offer the following comments in support of the intent. Invasive non-native plants have increased over the past years imposing a threat to the economic and environmental well-being of the landscape. This is due to the increase in human activities through commerce and tourism. The general public is unaware of what plant/vegetation native species may be considered native to one area and are non-native/unbeneficial to another area. This allows for the unknowing repercussion in the transport of seeds from area to area, state to state, continent to continent.

Invasive non-native vegetation alters the structure of native plant communities. The plant science industry works to develop selective products that are designed to chemically remove non-native vegetation. With the introduction of selective treatment products, this proves beneficial in treating an area of combined native and non-native vegetation without damaging the native vegetation.

Studies have shown that aminopyralid, fluroxypyr, and rimsulfuron herbicides, in their trade name products, have proven to work on resistant invasive non-natives. Therefore the Carlsbad SWCD fully supports the Department of Interior's Bureau of Land Management's intent to allow the use of these three new herbicides on public lands in the 17 western states.

Sincerely,

Nathan Jurva, Chairman
NJ:jb

----- Forwarded message -----

DOCUMENT #26

From: **Melissa Rehfeldt** <mlrehfeldt@gmail.com>

Date: Thu, Jul 30, 2015 at 4:32 PM

Subject: Comment on use of three new herbicides

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

I don't think the introduction of these three new herbicides is a good idea! Here is why.

There are three major concerns with the BLM's proposal:

- 1) The herbicides the BLM wants to add are toxic;**
- 2) Adding these three herbicides will primarily benefit private interests that lease or use public land for their own economic gain; and,**
- 3) It's time to change the paradigm of invasion biology that views invasive species as threats to ecosystems.**

Now, let's address each of these in a little more detail.

1) The herbicides the BLM wants to add are toxic.

Forty million people live within 25 miles of BLM-managed land in the 17 states where the new herbicides will be applied if the agency adopts the 'preferred alternative.'

In 2011, 57.8 million people visited BLM land for recreational purposes. Though the risk assessment performed as part of the Environmental Impact Statement (EIS) found low risk of human exposure, each of these new herbicides present toxicity concerns for humans and other creatures.

Aminopyralid remains stable even after passing through an animal's digestive system. Deer, elk, or cows that graze where Aminopyralid has been sprayed will carry the still-active herbicide far and wide through their manure. [\[Alternatives, Herbicide Active Ingredients Evaluated under the Proposed Alternatives – 26-01\]](#) Aminopyralid also has a high potential for surface water runoff because of its chemical structure. [\[Environmental Consequences, Water Resources and Quality – 26-02\]](#) Fluoxypyr is toxic to freshwater fish and aquatic invertebrates. [\[Environmental Consequences, Fish and Other Aquatic Organisms – 26-03\]](#) Rimsulfuron is an acetolactate synthase-inhibitor, a type of herbicide that kills plants by interfering with amino acid and DNA synthesis. Recent research demonstrates that animals and people have very similar mechanisms of amino acid synthesis, and may be affected by acetolactate synthase-inhibiting herbicides.

[\[Alternatives, Herbicide Active Ingredients Evaluated under the Proposed Alternatives – 26-04\]](#) And, although the BLM is requesting the addition of three new herbicide active ingredients, the herbicide formulations they purchase and use could contain a number of active ingredients (such as PastureGard that contains fluoxypyr and triclopyr). These herbicide formulations are not subject to toxicity testing that, and their potential synergistic effects are unknown.

[\[Environmental Consequences, Herbicide Effects Analysis – 26-05\]](#) In addition, most herbicide formulations contain undisclosed, untested, and unregulated surfactants and adjuvants that are not subject to regulatory scrutiny, making it impossible to know the full effects of applying these chemicals on public land. [\[Environmental Consequences, Herbicide Effects Analysis – 26-06\]](#)

- 2) Adding these three herbicides will primarily benefit private interests that lease or use public land for their own economic gain.**

The herbicides the BLM wants to add will be used primarily for improving the forage value of



rangelands. BLM land managers plan to use aminopyralid to control thistle species, fluoxypyr for prickly pear and kochia, and rimsulfuron on annual grasses like cheat grass. These particular plants are considered invasive in rangelands because they decrease the amount of forage available for cattle and sheep. However, the BLM doesn't own cattle or sheep, it leases land to people who do. By adding these three herbicides, the BLM will use public money to maintain the viability of private ranching interests. In addition to managing land for the direct benefit of grazing interests, the BLM also maintains rights of way for power lines, oil and gas pipelines, and roads for extraction of natural gas, oil, timber, and minerals. The BLM maintains over 106,000 rights of way that help keep the resource extractive industries in business. Maintaining rights of way with herbicide represents yet another

[Proposed Action and Purpose and Need, Purpose and Need for the Proposed Action – 26-07]

3) It's time to change the paradigm of invasion biology that views invasive species as threats to ecosystems.

The apparent threats that invasive species pose to ecosystems need to be placed in context of the ecological dynamics where they are found. Invasive species provide an ecological snapshot of above and below ground processes playing out in real time. If kochia, prickly pear, Russian thistle, and cheat grass are growing and spreading in western states, then it would be prudent to consider why they are thriving. Plants don't have malevolent intent or characteristics – they are making use of available niches.

If we treat invasive species as ecological indicators rather than problems, then it is possible to advance land management practices that make it less likely that invasive species will thrive.

[Proposed Action and Purpose and Need, Purpose and Need for the Proposed Action – 26-08]

Unfortunately, a 'no use of herbicides' alternative is not being considered as an option in the current process. Unfortunately, this decision means that the BLM is missing out on adopting land management strategies that lead to more diverse and productive ecosystems that are less prone to

[Alternatives, Alternatives Considered but not Further Analyzed – 26-09]

or poorly managed open range grazing is one of the main contributors to the proliferation of invasive species in western rangelands.

An ecologically based, long-term solution to invasive species management would change the way grazing is practiced on public lands. The BLM should lease land to grazers that practice holistic, planned grazing rather than open range grazing. Ranchers who practice holistic grazing find that their weed ‘problems’ disappear as their soil improves, which also increases water holding capacity, stores carbon in the soil, improves diversity and abundance of forage plant species, leading to increased animal health, and eventually higher economic returns. [Proposed Action and Purpose and Need, Scope of Analysis – 26-10] Another option would be to reinstate traditional indigenous land management practices like low-intensity burning to encourage populations of non-domesticated grazing animals like deer, elk, antelope, buffalo, as well as top predators like wolves and cougars. [Proposed Action and Purpose and Need, Scope of Analysis – 26-11]

Such practices would advance the ‘triple bottom line’ of social, ecological, and economic well-being and would allow BLM to manage western rangelands in ways that make them highly diverse, productive, and regenerative, rather than continuing those practices that contribute to their decline.

----- Forwarded message -----

DOCUMENT #27

From: **David Murray** <davidhugh5murray@gmail.com>

Date: Sat, Aug 1, 2015 at 8:52 AM

Subject: We have far too many poisons. Please care less about chemical company profits. We do not need these things.

To: blm_wo_vegeis@blm.gov

----- Forwarded message -----

DOCUMENT #28

From: **Ruth McHenry** <cca@coppervalleyak.net>

Date: Sat, Aug 1, 2015 at 10:21 AM

Subject: Comment: Vegetation Treatments Programmatic EIS

To: blm_wo_vegeis@blm.gov

Cc: AK_AKSO_Public_Room@blm.gov, blm_ak_gfo_general_delivery@blm.gov

Greetings,

Copper Country Alliance is a 501(c)(3) conservation organization which advocates for the protection of the rural and wild natural environment of Alaska's Copper River Basin. One of our many issues is non-native invasive plants. Our members have put in hours of pulling White Sweet Clover and have worked with a local utility company to prevent the spread of invasive plants. Although we do not have the resources to study aminopyralid, fluroxypyr, and rimsulfuron, we strongly urge that the following guidelines apply to all herbicide use by the Bureau of Land Management:

1. Unless there is no effective non-herbicide alternative, herbicides should not be employed. Herbicides should not be used simply because they are the cheapest alternative. [\[Alternatives, Introduction – 28-01\]](#)
2. Unless the threat imposed by the invasive plant to natural ecosystems is significant, herbicides should not be employed. Non-native dandelions, for instance, have been in Alaska for a century. They are scattered among our native flowers and do not seem to take over. *Elodea*, on the other hand, can quickly alter entire water bodies. [\[Alternatives, Introduction – 28-02\]](#)
3. When herbicides are used, always use the ones with the least "collateral damage" to non-targeted organisms, as long as they are still effective. [\[Alternatives, Introduction – 28-03\]](#)
4. Unless there is an urgent need to treat immediately (again, *Elodea* in a water body used by boaters or float planes is an example), the 45-day public comment period should be adhered to. [\[Consultation and Coordination, Public Involvement – 28-04\]](#)
5. Public comment periods should be well-publicized. Legal notices generally are not read by the public. There should be an article and/or attention-catching ad in a local paper and announcements on local radio stations. We very much appreciate that BLM Alaska's news release about this EIS appeared in our local paper. [\[Consultation and Coordination, Public Involvement – 28-05\]](#)
6. Signs should go up around the herbicide application area (including the drift zone) prior to, during, and after application. Signs should remain at the area for at least a year. This is especially true in Alaska, where herbicides break down more slowly than in warmer states. [\[Alternatives, Coordination and Education – 28-06\]](#)
7. Land and water in and around the application area should be checked for "collateral damage" to non-targeted organisms. [\[Alternatives, Herbicide Treatments Standard Operating Procedures and Guidelines – 28-07\]](#)

Finally, the Bureau of Land Management should press for new federal statutes or regulations that require herbicide manufacturers to reveal the chemical composition of "inert ingredients." In many instances, "inert ingredients" are not inert at all, but have significant impacts on organisms. [Environmental Consequences, Herbicide Effects Analysis – 28-08]

We appreciate this opportunity to comment.

Sincerely,

Ruth McHenry

--

Ruth McHenry, Volunteer Staff
Copper Country Alliance
HC60 Box 306T
Copper Center, AK 99573
907-822-3644



Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268

dowagro.com

AECOM
Attn. Stuart Paulus
710 Second Avenue, Suite 100
Seattle, WA 98104

Dear Mr. Paulus,

Dow AgroSciences commends the Bureau of Land Management (BLM) for continuing to improve their land management program by reviewing effective tools that are available to add to the list of approved herbicides. The 3 herbicides assessed in the DRAFT *Programmatic Environmental Impact Statement for Vegetation Treatments Using Aminopyralid, Fluroxypyr and Rimsulfuron on BLM Lands in 17 States* are effective herbicides that can help the BLM accomplish its land management objectives by reducing (1) the spread of noxious weeds and other invasive plants; (2) the buildup of hazardous fuels and risk of wildfire; and (3) the loss of wildlife habitat. These herbicides can also help stabilize and rehabilitate sites impacted by fire and restore native plant communities.

Dow AgroSciences supports Alternative B (the preferred alternative) – “Allow for the Use of Three New Herbicides in 17 Western States”. The BLM administers 247.9 million acres of federal land and Alternative B would allow for use of herbicides on only up to 923,000 acres of BLM managed land (0.37% of BLM managed lands). These tools are critical to the success of BLM management of invasive and noxious weeds on those acres where herbicides will be allowed.

Nonnative invasive plants are spreading at an estimated 4,600 acres per day on federal lands in the Western United States.^{1/} In 10 years from 1985 to 1995; invasive plants have more than quadrupled their range in the Western United States to an estimated 17 million acres^{1/}. Invasive plants destroy wildlife habitat, threaten endangered species and native plants, increase soil erosion and groundwater loss, and block recreational opportunities. The BLM needs the use of the most effective tools, which includes these 3 herbicides, to manage increasing infestations of invasive and noxious weeds.

AMINOPYRALID

Dow AgroSciences agrees that aminopyralid has “little to no acute or chronic toxicity to mammals and that it has little toxic impact on birds, terrestrial invertebrates, fish and aquatic invertebrates”. Aminopyralid was registered by USEPA under the Reduced Risk Pesticide Initiative due to its improved toxicology and environmental profile over some of the herbicides already approved by the BLM.

1/ http://www.blm.gov/wo/st/en/res/Education_in_BLM/Learning_Landscapes/For_Kids/homework_helpers/invasive_species.html



The use of aminopyralid on BLM managed lands will allow the BLM to continue reductions in the number of pounds of herbicide active ingredients applied on rangeland, pastures, rights-of-way and wildlife habitat areas by replacing old herbicide standards. Aminopyralid is the lowest-rate growth-regulator herbicide available for these uses. For example, the use rate for aminopyralid of 0.0625 lb ae/A on rangeland would be 4 to 20 times less than the standard rates of the herbicides it can replace, as demonstrated by the following examples^{2/}.

The average use rate for aminopyralid on rangeland is:

- 4 times lower than the average rate of picloram in Tordon[®] 22K (0.25 lb ae/A)
- 5 times lower than the average rate of dicamba and 2,4-D in Weedmaster (0.9675 lb ae/A)
- 16 times lower than the average rate of 2,4-D (1 lb ae/A)

It is also worth mentioning that picloram (Tordon 22K) is not registered for use in California but aminopyralid is registered in that state. Therefore, it is more important for those BLM land managers in California to have aminopyralid as a tool in their herbicide tool box so that they can effectively control key invasive/noxious weeds like yellow starthistle using an effective, low rate herbicide. [Supplemental Reports – Ecological Risk Assessment – 29-01]

Aminopyralid is proving to be extremely useful to natural resource managers in native habitat restoration^{3/}. Early research data showed that aminopyralid could be applied broadcast over established or newly planted grasses (over 30 different grass species, including native species) in rangeland, wildland areas and restoration projects. The question remained what the effects of aminopyralid would be on native and desired forbs. Research in 6 states (Colorado, Idaho, Minnesota, Montana, North Dakota, and South Dakota) at 16 different locations was established to determine long-term response of native forbs to Milestone[®] applied in early summer (June) or fall (September or October), and to develop a tolerance and susceptibility ranking for native plants and desired forbs^{4/}. These data show that aminopyralid can be used to manage invasive plants in mixed plant communities and can serve to manage invasive plants and act as a catalyst to facilitate recovery of desirable forbs.

While some aquatic plants are sensitive to aminopyralid, its labeled uses do not include applications to control submerged and/or floating plants in aquatic sites and therefore it is highly unlikely that aquatic plants would be exposed to a level of aminopyralid that might cause injury or harm.

2/ Nelson J, et al. 2004. Public Interest Document for Aminopyralid. MRID No. 46235835

3/ DiTomaso, J., G. Kyser. Effects of Aminopyralid on California Annual Grassland Plant Communities. 2015. Invasive Plant Science and Management 8:98–109 and Harrington, T., D. Peter, and W. Devine 2014. Two-Year Effects of Aminopyralid on an Invaded Meadow in the Washington Cascades. Invasive Plant Science and Management 7:14–24

4/ http://bit.ly/techline_tolerance



Regarding the potential toxicity of aminopyralid to amphibians there appears to be some discrepancy within the Environmental Risk Assessment. In several areas of the document there is mention of no information on amphibian toxicity:

- 1- On page 5 it states, “No toxicity studies conducted on amphibian species were found in the literature.”
- 2- On page 35 in Table 3-1 there is mention of “no data” for amphibian toxicity reference values.
- 3- On page 107 it is stated that, “No conclusions can be drawn regarding the sensitivity of amphibians to exposure to aminopyralid relative to the surrogate species selected for the ERA.”
- 4- On page 131 in Table 7.1 it states that there is a “Lack of toxicity information for amphibian and reptile species”

However, on page 33 in section 3.1.3.2 there is a review of an amphibian study in which USEPA has classified aminopyralid as practically non-toxic to aquatic-phase amphibians (USEPA2005b). See also EPA document number MRID No. 46235816. Therefore, the references to a lack of data on amphibians should be corrected.

[Supplemental Reports – Ecological Risk Assessment – 29-02]

It could be noted that all of the incidents listed in the Aminopyralid Incident Report Summary (Table 2-2 of the Aminopyralid Ecological Risk Assessment) were early in the registration of aminopyralid. It was registered under the EPA Reduced Risk Program in 2005 and the incidents were from 2006 through 2009 which indicates that applicators learned how and where best to apply aminopyralid. There were no incidents listed past 2009 - 6 years ago. [Supplemental Reports – Ecological Risk Assessment – 29-03]

In section 7.3.1 “Degradates” it states “The lack of data on the toxicity of degradates of aminopyralid represents a source of uncertainty in the risk assessment.” However, aminopyralid goes to mineralization (C, O², and N) so there are no degradates to be studied. USEPA has not identified any metabolites of concern in any matrices so the uncertainty stated here does not exist. [Supplemental Reports – Ecological Risk Assessment – 29-04]

FLUROXYPYR

Dow AgroSciences agrees that fluroxypyr poses “little to no acute toxicity hazard to mammals ... (and that it) has little toxic impact on birds, terrestrial invertebrates, fish and aquatic invertebrates”. We would also add that fluroxypyr poses no chronic toxicity hazard to mammals as the review of chronic data shows in the Fluroxypyr Ecological Risk Assessment (page 28), so that should be noted in the Executive Summary (ES-3) and elsewhere throughout the document. [Supplemental Reports – Ecological Risk Assessment – 29-05]

In section 4.3.1.1 “Terrestrial Wildlife” it is improbable that with an LC50 of >25 ug ai/bee for fluroxypyr that direct applications of fluroxypyr would be above the LOC. We



Dow AgroSciences

recommend that these calculations be re-worked to be sure that there is not an error.
[Supplemental Reports – Ecological Risk Assessment – 29-06]

While some aquatic plants are sensitive to fluroxypyr, its labeled uses do not include applications to control submerged and/or floating plants in aquatic sites and therefore it is highly unlikely that aquatic plants would be exposed to a level of fluroxypyr that might cause injury or harm. [Supplemental Reports – Ecological Risk Assessment – 29-07]

OTHER

Just a comment, the link to this reference did not work.

New York State Department of Environmental Conservation (NYSDEC). 2007. Letter to Mr. Jim Baxter of Dow AgroSciences, LLC. Re: Withdrawal of Milestone Herbicide Application (US EPA Reg. No. 627! 9-519) Containing the Active Ingredient Aminopyralid. Chemical Code: 005209 Available at URL: http://pmep.cce.cornell.edu/profiles/herb-growthreg/24-d-butylate/aminopyralid/aminopyr_wth_0207.pdf.

[Supplemental Reports – Ecological Risk Assessment – 29-08]

In conclusion, Dow AgroSciences commends the Bureau of Land Management (BLM) for continuing to improve their land management program by reviewing new tools that are available to add to the list of approved herbicides. **We support Alternative B (the preferred alternative) – “Allow for the Use of Three New Herbicides in 17 Western States”.**

Sincerely,

Jeff Nelson

Jeff Nelson, PhD

Global Product Development Leader for Range and Pasture

Dave Barnekow

Dave Barnekow, PhD

U.S. Registration Manager for Aminopyralid

Dave Ouimette

Dave Ouimette

U.S. Registration Manager for Fluroxypyr

Vanelle Peterson

Vanelle Peterson

Senior Research Scientist

Cc Richard Lee, BLM IPM Specialist, Denver CO

----- Forwarded message -----

DOCUMENT #30

From: **Katy Wardlaw** <katywardlaw@gmail.com>

Date: Mon, Aug 3, 2015 at 8:26 AM

Subject: Addition of three new herbicides to public land

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

I am against the Bureau of land management allowing the three new herbicides to be used to control invasive species in the Western states. The new herbicides are toxic to the environment and the use of herbicides to control invasive species is a short term solution. The mission of the BLM is to protect public lands for future generations. To do that the BLM needs to put a stop to the grazing practices which are degrading the land and allowing invasive species to become established. **[Proposed Action and Purpose and Need, Scope of Analysis – 30-01]**

Sent from my iPhone

----- Forwarded message -----

DOCUMENT #31

From: **Erika Edmiston** <ewells@tcweed.org>

Date: Mon, Aug 3, 2015 at 10:37 AM

Subject: Comments: Draft Programmatic Environmental Impact Statement Vegetation Treatments..

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

To Whom It May Concern,

The Teton County Weed & Pest Control District is in support of the use of three very important herbicides (Aminopyralid, Fluroxypyr, and Rimsulfuron) to be utilized on Bureau of Land Management properties in 17 Western states. These herbicides will greatly compliment the portfolio of herbicides already utilized by the BLM.

The District has been utilizing Aminopyralid since it was introduced many years ago. It has added quality weed control for some very difficult to control species such as Spotted knapweed, Russian knapweed, Canada thistle, and Musk thistle, to name a few. This product gives us excellent control of these noxious weeds, yet reduces off-target damage as found with other herbicides. We utilize this product where we want increased bio-diversity of plant types as well as quality reduction of impacts from the invasive plants. Utilizing this product with its low use rate offers greater applicator safety, decreases the amount of pesticide into the environment, and allows the use of the product in diverse situations such as along waterways, riparian zones, as well as range and pasture areas.

The District encourages the BLM and other federal agencies to add Aminopyralid, Fluroxypyr, and Rimsulfuron to their portfolio of quality invasive weed control herbicides. These herbicides add quality of control as well as decreased off-target damage to other species when used according to their federal label.

Sincerely,

Erika Edmiston

Supervisor: Teton County Weed & Pest District

7575 So. Highway 89

Jackson, WY 83001

307.733.8419



To Whom It May Concern:

I would like to add my comments to the approval process for aminopyralid and fluroxypyr. The addition of these products is critical to the continued ability to properly manage vegetation on BLM ground. As you well know, noxious and invasive species of weeds and brush are a growing threat to native ecosystems. It is critical that we use all available tools to not only control these plants before they spread, but also to do everything in our power to reduce the chances of the noxious and invasive plants developing resistance. The best method for achieving this is rotating control practices – and this includes rotating herbicides.

The two herbicides being considered, aminopyralid and fluroxypyr, will vastly increase the land manager's tool kit in the fight against these plants. In addition, these chemistries also have the following benefits:

- Show excellent activity on several noxious invasive plants as well as some traditionally hard to control species like mesquite, thistles, kochia, cholla and prickly pear, among many others.
- These two chemistries are safe on native grasses
- They don't have grazing restrictions on their label
- Some aminopyralid formulations are safer on desirable plants than current practices
- Fluroxypyr formulations have little or no soil activity making them ideal for reseeding rangeland
- Low use rates for aminopyralid (less pounds on the ground)
- **Better all around safety to applicators, livestock and wildlife and excellent environmental profile compared to other BLM approved herbicides**

Thank you for your consideration.

Regards,

A handwritten signature in black ink, appearing to read 'Andy Pierce', with a stylized, flowing script.

Andy Pierce

----- Forwarded message -----

DOCUMENT #33

From: **Jan Wroncy** <jan@ghdigital.com>

Date: Mon, Aug 3, 2015 at 8:38 PM

Subject: Draft EIS for 3 chemicals on BLM lands in 17 western states

To: blm_wo_vegeis@blm.gov

Cc: Gary Hale <gary@ghdigital.com>

Ms. Gina Ramos
PEIS Project Manager
Bureau of Land Management
1849 C Street, NW Rm 2134 LM, WO-220
Washington, DC 20240
(206) 623-3793-FAX
Email: blm_wo_vegeis@blm.gov

Regarding comments on Draft Programmatic Environmental Impact Statement Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States. We need more time to consider the impacts of these chemicals in light of the recent EPA ruling regarding small streams. Please extend the comment period for 30 more days. **[Consultation and Coordination, Public Involvement – 33-01]**

The comment period for the RMP for Western Oregon was extended. The deadline, previously July 23 was extended to August 21. We need more time to submit comments for both planning documents.

Jan Wroncy and Gary Hale
94340 Horton Rd
Blachly OR 974212

----- Forwarded message -----

DOCUMENT #34

From: <chuckw@coastrange.org>

Date: Mon, Aug 3, 2015 at 7:39 PM

Subject: Comments on the Draft Programmatic Environmental Impact Statement Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States

To: "blm_wo_vegeis@blm.gov" <blm_wo_vegeis@blm.gov>

Below and in the attached document are the Coast Range Association comments on the Draft Programmatic Environmental Impact Statement Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States.

To whom it may concern,

Thank you for the opportunity to comment on the Draft Programmatic Environmental Impact Statement Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States. The Coast Range Association's membership is gravely concerned about the impact to human's, fish and aquatic species by the use of the pesticides.

The DEIS CHAPTER 4. ENVIRONMENTAL CONSEQUENCES (page 4-14) states that "The proposed herbicide treatments have the potential to affect water resources on or near public lands by altering water flows, surface water and groundwater quantity and quality, and rates of groundwater recharge." Additionally, on page 4-41 is stated under Fish and Other Aquatic Organisms that "The proposed herbicide treatments have the potential to affect fish and other aquatic organisms, predominantly through indirect effects to aquatic habitats and adjacent riparian and upland habitats." In both cases cited above, the BLM notes positive affects. Yet, on page 4-43 the DEIS states "All herbicides pose some risk to non-target terrestrial and aquatic plants. These risks should be considered, as damage to riparian and aquatic plants may affect fish and aquatic invertebrates. Potential effects from vegetation removal in riparian areas include loss of necessary habitat components (i.e., cover and food), increased sedimentation into aquatic habitats, altered nutrient dynamics, and increased water temperature due to a reduction in shade." [Environmental Consequences, Fish and Other Aquatic Organisms – 34-01]

The Coast Range Association has attached as part of our comments a report titled CONSERVATION OF AQUATIC AND FISHERY RESOURCES IN THE PACIFIC NORTHWEST: Implications of New Science for the Aquatic Conservation Strategy of the Northwest Forest Plan. The report has a section that

speaks to pesticides and aquatic species. If you have follow up questions based on information in the report please contact Chris Frissel, Polson, MT. Chris' email address is <leakinmywaders@yahoo.com>. Specifically we refer the BLM to Page 18 of the report Chemical Use in Forests. Please accept this section of the report as Coast Range Association comments. ." [Environmental Consequences, Fish and Other Aquatic Organisms – 34-02]

Additionally, the DEIS indicates that aerial spraying may be employed in the application of the chemical in question. We oppose any aerial spraying because studies have shown unacceptable drift occurs using the Best Management Practices. [Alternatives, Alternative C – No Aerial Application of New Herbicides – 34-03]

We ask whether the BLM has assessed the non-monotonic effects of the chemicals Aminopyralid, Fluroxypyr, and Rimsulfuron. Are these chemicals hormone mimicking compounds? [Environmental Consequences, Herbicide Effects Analysis – 34-04]

We also refer the BLM to the following article in BioScience: A Perspective on Modern Pesticides, Pelagic Fish Declines, and Unknown Ecological Resilience in Highly Managed Ecosystems
Article in BioScience 62(4):428-434 · March 2012 [Environmental Consequences, Fish and Other Aquatic Organisms – 34-05]

Thank you for accepting our comments.

Chuck Willer
Executive Director
Coast Range Association
PO Box 2250
Corvallis, OR 97339

CONSERVATION OF AQUATIC AND FISHERY RESOURCES IN THE PACIFIC NORTHWEST:

Implications of New Science for the Aquatic Conservation Strategy of the Northwest Forest Plan

Frissell, Christopher A.

Baker, Rowan. J.

DellaSala, Dominick A.

Hughes, Robert M.

Karr, James R.

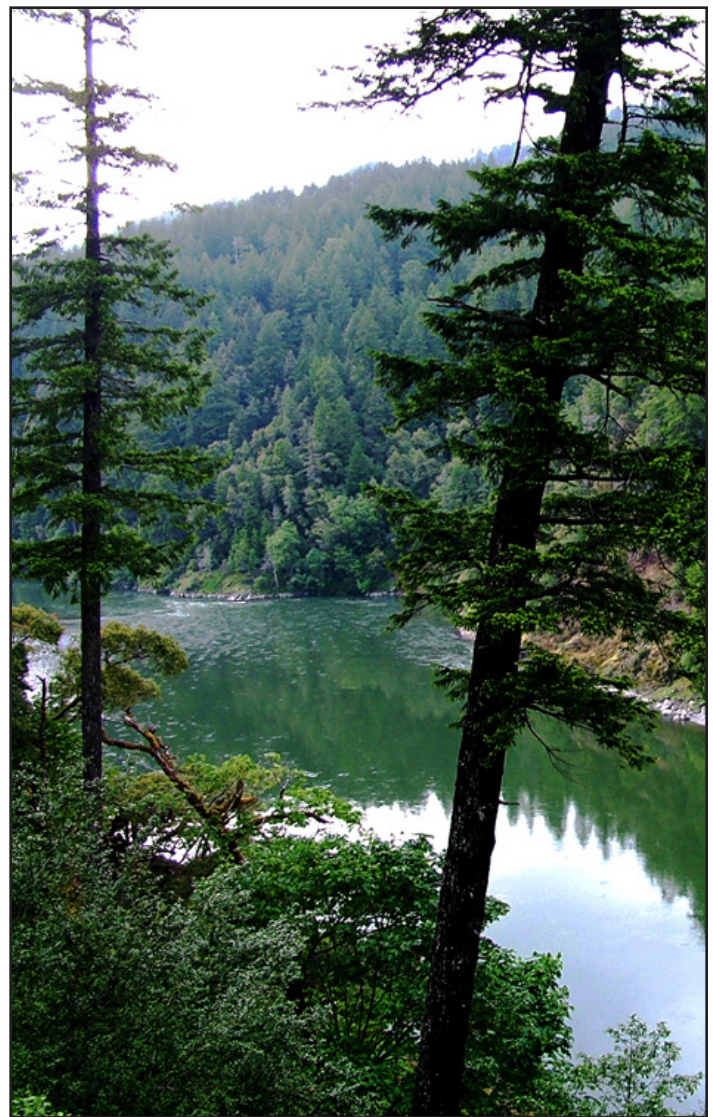
McCullough, Dale A.

Nawa, Richard. K.

Rhodes, Jon

Scurlock, Mary C.

Wissmar, Robert C.



FINAL REPORT
July 30, 2014

CONSERVATION OF AQUATIC AND FISHERY RESOURCES IN THE PACIFIC NORTHWEST:

Implications of New Science for the Aquatic Conservation Strategy of the Northwest Forest Plan

ABSTRACT

Twenty years have elapsed since a major science synthesis and planning effort led to adoption of the Aquatic Conservation Strategy (ACS) of the Northwest Forest Plan (NFP) in 1994. Their purpose was to protect and restore riparian and aquatic ecosystems on Pacific Northwest federal forest lands and to ensure that forest management plans achieved legally required and socially desired multiple use objectives, including water quality, aquatic and wildlife resources. In this paper, we review relevant science emerging since 1993 to assess whether proposed changes to the ACS, including reduced riparian reserve protections and a substantially lowered burden of proof for watershed-disturbing activities, are scientifically justified. Observed and anticipated effects of climate change, and of cumulative anthropogenic stressors operating in the nonfederal lands surrounding NFP lands strongly indicate the need to strengthen, not weaken key ACS protections. Roads and ground disturbance associated with mechanical thinning and fuels reduction activities, especially within Riparian Reserves, cause adverse environmental impacts that generally offset or exceed presumed restorative benefits. Headwater streams warrant wider riparian forest buffers than current ACS provisions to ensure effective retention of sediment and nutrients derived from upslope logging, fire, and landslides. Widespread and sustained ecological harm caused by roads is now widely recognized, and ACS measures should be strengthened to more effectively arrest and reduce road impacts in all catchments. Grazing, mining, post-disturbance logging (e.g., fire salvage), water withdrawal, and aerial application of toxic chemicals can cause both acute and chronic harm to aquatic ecosystems. Existing ACS standards and guidelines would need to be strengthened to more effectively control these impacts. A more thorough and current scientific review and synthesis by federal agencies to inform a future ACS is long overdue. Unfortunately, no such review has occurred, while recent agency and legislative proposals would substantially reduce protective provisions of the ACS and NFP by increasing the extent of logging and other mechanized forest management, such as fuels treatments.

Introduction: Origins of the Aquatic Conservation Strategy

In 1994, region-wide social protest over logging old-growth forests, court injunctions on federal forest timber sales, and a rare presidential “roundtable” summit, led to sweeping changes the management of federal forest lands in the U.S. Pacific Northwest. The federal agencies with primary land management responsibilities, the U.S. Department of Agriculture’s Forest Service (USFS) and U.S. Department of Interior’s Bureau of Land Management (BLM), jointly adopted a new, regional conservation and management framework now known as the Northwest Forest Plan (hereinafter referred to as the NFP, or the “Plan”). The NFP was designed to meet President Clinton’s call for an approach that would (1) satisfy federal courts and lift the injunctions, (2) protect the environment, and (3) help stabilize the regional economy (GAO 1999). The Plan’s Record of Decision (USDA and USDI 1994) offered a “scientifically sound, ecologically credible, and legally responsible” long-term management strategy for federal lands within the range of the northern spotted owl (*Strix occidentalis caurina*). The NWP region encompasses over 99,000 square km (24.5 million acres) within the highly productive forest zones of western Washington and Oregon and northern California. In addition to spotted owls and other wildlife species dependent on late seral forests, these federal lands also harbor sensitive, declining, and federally listed salmon species (FEMAT 1993; USDA and USDI 1994). Declines in once-abundant salmon and other fish assemblages, amphibians and invertebrates (e.g., river mussels) indicate substantial and persistent loss of aquatic ecosystem integrity (Hughes et al. 2004; Kaufmann and Hughes 2006).

To ensure that the new plan had the sound scientific basis necessary to withstand legal scrutiny, the federal agencies convened an interagency and interdisciplinary panel of scientists (Forest Ecosystem Management Assessment Team, FEMAT 1993) to develop the

rationale and options for conservation provisions of the Plan. Recognizing that terrestrial and freshwater species fundamentally share the same landscape, FEMAT scientists developed a system of terrestrial reserves and conservation provisions and a separate but overlapping Aquatic Conservation Strategy (“ACS”).

Since the NFP was adopted, social and political pressure have mounted to significantly recast or eliminate the Plan (e.g., Johnson and Franklin 2012), including key elements of its ACS. In late 2013, two bills were introduced in Congress (S.1784 and H.R.1526) that would substantially reshape management on approximately 8000 square km (roughly 2 million acres) managed by the BLM in western Oregon. Separately, the BLM has initiated an administrative planning process intended to result in a decision to replace the NFP policies. These efforts appear principally motivated by the goal of increasing commercial timber production (Blumm and Wigington 2013, DellaSala et al. 2014). Meanwhile, the Forest Service has adopted guidance that would permit substantial alteration of key elements of the ACS in future revisions of its National Forest Management Plans in the Pacific Northwest.

Both agency and congressional proponents of significant alterations of the NFP and its ACS have referred generally to “new science” as a basis for many proposed changes. However, we find that post-1993 scientific findings relevant to the ACS have not been synthesized and addressed in a systematic manner. In this paper we review the key ACS elements, briefly discuss several proposed modifications, and identify concerns about the likely consequences of proposed modifications. Finally we identify needed improvements in the protective measures in the ACS as indicated by new and emerging scientific knowledge, and suggest the form future revisions of ACS provisions might take if they are to be responsive and robust to recent scientific advances.

Core Design Elements of the Aquatic Conservation Strategy

FEMAT (1993) articulated the ACS with two spatial and two programmatic components for managing watersheds and riparian areas: (1) *Key Watersheds*, a land allocation comprising hydrologically discrete areas that putatively contain much of the remaining higher-quality

aquatic habitat and offer the greatest potential protection for recovering at-risk fish species. These watersheds are priorities for active restoration, ARE subject to a “no net increase” mandate for road density and watershed analysis mandate for major land use activities.

TABLE 1.

The nine narrative ACS Objectives describing watershed functions and processes and which apply landscape-wide (USDA and USDI. 1994. Record of Decision, p.B-11).

Forest Service and BLM-administered lands within the range of the northern spotted owl will be managed to:

- 1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.*
- 2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.*
- 3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.*
- 4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.*
- 5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.*
- 6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.*
- 7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.*
- 8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.*
- 9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.*

(2) *Riparian Reserves*, a land allocation of varying widths along streams and lakes where aquatic and riparian objectives receive primary emphasis and where management is constrained according to activity-specific standards and guidelines. (3) *Watershed Analysis* is an assessment procedure designed to recommend how to tailor management priorities and actions to the biophysical limitations and perceived restoration needs of individual watersheds. (4) *Watershed Restoration*, a long-term program of somewhat unspecified scope and content, but which may include such wide-ranging provisions as road decommissioning, instream habitat alterations, and other measures (ROD 1994).

Late Successional [forest] Reserves, Congressionally designated reserves, and administratively withdrawn areas are land allocations outside of the specific components of the ACS, but they provide additional protection for portions of watersheds, riparian and aquatic ecosystems, particularly in terms of how they regulate landscape-wide management disturbances. In turn, aspects of the ACS also help provide habitat and connectivity for terrestrial wildlife species (ROD 1994, p.7). Many birds, mammals, amphibians, and invertebrates benefit from roadless areas (Trombulak and Frissell 2000); require large trees or wood debris for nesting or other uses; or rely on riparian forests for refuge, foraging, or dispersal (Pollock and Beechie 2014).

Beyond land allocations, the ACS imposes constraints on habitat-degrading management activities in two other ways: 1) It provides binding *standards and guidelines* that explicitly constrain numerous potential management activities within riparian reserves and key watersheds. 2) It requires all management activities on surrounding federal forestlands to be consistent with maintaining and restoring watershed functions and processes that are described in nine narrative ACS objectives (Table 1). The activity-specific

standards and guidelines were intended to “prohibit and regulate activities in Riparian Reserves that retard or prevent attainment of the [ACS] objectives” (USDA and USDI 1994). The precaution that management activities may not retard recovery is a potent requirement. In order to ensure an action does not retard or prevent attainment of recovery, managers must ascertain the net effects of any proposed action on natural recovery processes at site-specific areas and larger spatial scales. This requirement addresses the observation (FEMAT, 1993) that past ecological degradation caused by numerous incremental harms often is not recognized. Cumulative effects across the landscape commonly offset gains from those passive or active management measures claimed to benefit ecological conditions and aquatic resource values.

Although it is beyond the scope of this paper to enumerate the many activity-specific standards and guidelines that comprise the ACS, some specific examples will be discussed because they are conspicuously affected by new or emerging scientific knowledge. The nine overarching ACS objectives also have binding force and constitute forest-wide standards and guidelines themselves (ROD 1994). This approach was explicitly intended to constrain activities in geomorphically, hydrologically, and ecologically sensitive areas and to limit the cumulative impacts of activities throughout a watershed (FEMAT 1993, V-29). The identified goal was to maintain conditions within a broadly conceived “range of variability” across multiple spatial and temporal scales, by evaluating, avoiding, or reversing ecologically harmful management at watershed and site-specific scales. The science of ecological restoration broadly recognizes that avoidance of adverse impacts is far more effective than post-hoc remediation of impacts (Kauffman et al. 1997, Karr et al. 2004, Roni et al. 2008), and this principle is codified in the Plan’s Standards and Guidelines for watershed restoration (guideline WR-3 clearly states: “Do

not use mitigation or planned restoration as a substitute for preventing habitat degradation.”) During the mid-1990s, some federal agencies argued that site-specific failure to meet ACS objectives was broadly acceptable if unacceptable outcomes were not expected to be observed at larger scales. However, courts have validated that the conservation burdens delineated in the ACS apply to both site- or project-specific as well as larger scales, such as a watershed, planning area, or national forest.¹ The guiding language in the nine narrative objectives directs managers to “maintain and restore” specifically identified ecological conditions and functions. Hence management activities that will affect aquatic ecosystems may be pursued only under a reasonable assurance that they are restorative or protective in nature. It is not sufficient that management activities produce acceptably small adverse impacts, or cause harms that might potentially be mitigated by other measures.

Courts have ruled that FEMAT (1994) embodies the best available scientific information pertaining to the impacts of forestry activities on salmon and their habitat in the Pacific Northwest federal forests and that the Plan adequately integrates FEMAT’s scientific representations². Several scientific reviews (e.g.,

1 See e.g. *Pac. Fed’n of Fishermen’s Ass’ns et. al. v. Nat’l Marine Fisheries Serv.*, 71 F. Supp. 2d 1063 (W.D. Wash. 1999) (“PCFFA II”) (finding that the Plan requires a determination of consistency with the ACS objectives at the project scale); *Pac. Fed’n of Fishermen’s Ass’ns et. al. v. Nat’l Marine Fisheries Serv.* 265 F.3d 1028 (9th Cir. 2001) (“PCFFA III”) (finding NMFS’ biological opinions on 23 timber sales affecting then-listed Umpqua cutthroat trout and Oregon Coast coho salmon failed to assess site-level impacts).

2 See e.g. *Seattle Audubon Soc’y v. Lyons*, 871 F. Supp 1291, 1303 (W.D. Wash. 1994), *aff’d sub nom.*, *Seattle Audubon Soc’y v. Moseley*, 80 F.3d 1401 9th Cir. 1996) (finding adequate scientific support in the plan’s decision record and “unprecedented thoroughness” of the agencies’ effort to meet “the legal and scientific needs of forest management”).

Spence et al. 1996, DellaSala and Williams 2006, Reeves et al. 2006a, Everest and Reeves 2006) have broadly concluded that while a great deal of new information has been published, the fundamentals and rationale of FEMAT and the ACS remain consistent with available scientific information. However, no interagency scientific panel comparable to the scope of FEMAT has been reconvened to formally address the broad question of how new scientific information may affect the validity of the ACS and how that might in turn affect Endangered Species Act (ESA) consultations, Clean Water Act (CWA) compliance, or NEPA, NFMA, and other relevant project level planning processes.

Because the ACS is incorporated into agency land use management plans, it is directly enforceable by third parties pursuant to the over arching resource planning statutes of the USFS and BLM. While the majority of distribution of salmon species in the Pacific Northwest lies downstream of federal forest watersheds, the federal lands provide important high-quality refugia for many populations (Burnett et al. 2006), and federal forests confer regional hydrologic benefit to water quality and ecosystem integrity downstream. Implementation of the ACS on federal forests has become a foundational baseline component for attainment of salmonid recovery under the Endangered Species Act and of water quality standards under the Clean Water Act. For example, federal ESA salmon recovery plans in Oregon and California rely heavily on Plan implementation (e.g., NMFS 2007, pp. 402-403, NMFS 2012, pp. 3-48, 49). Furthermore, because of the extent to which ACS implementation is widely assumed to represent the federal contribution to aquatic ecosystem conservation, changes have regulatory implications for nonfederal lands. For example, the underlying analyses of Habitat Conservation Plans granted to nonfederal landowners in the Pacific Northwest under the ESA, with assurances extending 40-50 years, explicitly rest on full ACS implementation on surrounding federal lands. (See e.g. WA DNR 2005). Similar expectations

undergird the state of Oregon's restoration plan for salmon and water quality.³ In basins where water quality standards are not being met, state and federal regulators routinely

3 http://www.oregon.gov/OPSW/archives/ocsri_mar1997/ocsri_mar1997ex.pdf (identifying NFP implementation as a critical element of Oregon's salmon recovery plan)

consider the ACS to be an adequate implementation plan for BLM and Forest Service managers. Substantive alteration and weakening of the ACS threatens to upset a complicated web of region-wide conservation planning that is explicitly and implicitly dependent on the future habitat quality and recovery rate that the ACS is designed to achieve.

Changes to the ACS Proposed by Administrative and Legislative Efforts

ACS Riparian Reserves. Based on the nested set of ecological rationales considered in FEMAT (1993), the ACS specified a set of "default" widths of the Riparian Reserve land allocation to be a) at least two site-potential tree heights (*ca.* 100 m or 330ft) on either side of fish-bearing streams, and b) at least one tree height (*ca.* 50 m or 160 feet) on non-fish bearing streams. Within these reserves, the conservation of aquatic and riparian-dependent terrestrial resources receives primary emphasis. Beyond these default delineations, Riparian Reserves must be drawn to protect areas susceptible to channel erosion and mass wasting. The Riparian Reserve widths were based on ecosystem process considerations (FEMAT 1993, Olson et al. 2007) and broadly specified population viability and habitat considerations for seven groups of salmonids and many terrestrial and avian species. Various sources (e.g., Johnson et al. 2012) have estimated that based on the high stream densities prevailing over much of the region, roughly 40% of total acres within the Plan area are located within the "default" Riparian Reserve system. However, only about 11% of the Plan area lies in Riparian Reserves associated with those areas (often referred to as "Matrix lands") where commercial logging is expected to be concentrated, and where the Riparian Reserve allocation most directly restricts potential logging activity and other management-related disturbances. Very few of the many completed watershed analyses offered a scientific rationale for reducing default Riparian Reserve

areas in any location; a larger number identified site-specific reasons to expand Riparian Reserves beyond the specified default widths (Pacific Rivers Council 2008).

Proposed Changes to the ACS and Riparian Reserves. The BLM's 2008 Western Oregon Plan Revisions (WOPR) proposed a new regime of management for the "Oregon and California (O&C) Lands, distributed widely across western Oregon (Blumm and Wigington 2013). The WOPR proposed greatly reducing default Riparian Reserve widths, primarily arguing that ACS default delineations include some upland or "non-riparian" vegetation and that summer stream shade and large wood recruitment to fish-bearing streams could be maintained with narrower reserve widths. Narrative objectives and standards and guidelines were also reduced or eliminated, allowing commercial timber harvest in Riparian Reserves for pervasive "safety and operational" reasons. The analyses and rationale underlying the WOPR were withdrawn by BLM in 2009 in significant part because they were deemed unlikely to survive consultations with ESA enforcement agencies (the National Marine Fisheries Service and US Fish and Wildlife Service). In a recent regional planning document, BLM (2013) argued again that "Riparian Reserve boundaries extend out beyond the water influence zone and are wider than necessary for water quality protection" but provided few or no specific scientific citations to support these claims. BLM has provided little scientific rationale or empiri-

cal validation for their decision to selectively focus on hydrophilic vegetation, proximate stream shade, and large wood recruitment as the only ecological considerations dictating riparian reserve delineation—in contrast to the much more comprehensive set of biophysical functions considered in FEMAT and the NFP ACS. (Note, as detailed later in this text, we also disagree with BLM’s specific simplifying assumptions about effect of Riparian Reserve width on maintenance of shade and wood recruitment, and further conclude that other functions, such as nutrient retention, implicate much wider and less-disturbed reserves.)

A similar extremely constricted perspective on riparian ecological functions appears to underlie two Congressional bills for BLM lands in western Oregon (the “O&C” Lands), one of which (H.R. 1526, <http://defazio.house.gov/issues/bipartisan-oc-forests-plan>) would reallocate some 675,000 ha (1,667,000 acres) to an “O&C Trust,” the primary purpose of which is timber management (Blumm and Wigington 2013). Areas equivalent to Riparian reserves in the Trust would be designated at about half the width of the current ACS default requirement for steams (with extremely limited buffers for springs, seeps, wetlands, and unstable landscapes). A U.S. Senate bill introduced in 2013 (S.1786) would allocate about 50% of O&C lands to so-called “forestry emphasis areas,” cut default Riparian Reserve areas by half across all stream types, with further narrowing if watershed analysis deems them “not ecologically important.” The bill would provide for potentially extensive commercial logging in the rubric of thinning riparian areas where stands are younger than 80 years of age; only stands older than 120 years would be protected from logging. These older stands remain in scattered small patches across O&C lands but are important ecologically given high levels of timber cutting on surrounding nonfederal lands (DellaSala et al. 2013). Environmental review at the project level would also be curtailed from current requirements, including but not limited to eliminating the requirement

for project-level determinations of consistency with ACS objectives.

Meanwhile the USFS—which manages the majority of federal forestlands in the three state NWP area, has focused on incrementally replacing the ACS with new provisions in upcoming revisions of individual National Forest Plans. In 2008 the Forest Service adopted new regional planning guidance (USDA 2008) that generally mirrors the NFP default riparian area widths and key watersheds allocations, but altered the narrative ACS Objectives, Watershed Analysis, and other NFP direction for management within reserve areas. This guidance stakes a claim for expanded agency discretion to undertake a broader range of vegetation and ground-disturbing management activities within riparian reserves, including but not limited to thinning and other commercial logging and livestock grazing. The 2008 Forest Service regional guidance, if implemented in future revised Forest Plans, would allow actions that alter riparian reserve resources and goals, as long as managers can present a general argument that impacts would be offset by other, beneficial actions or naturally-occurring improvements dispersed or averaged across time or space. The apparent intent of these changes is to reduce the burden for analysis of environmental impacts associated with such projects, which would, for example, streamline approval of more aggressive implementation of mechanized and commercial thinning and other vegetation- and ground-disturbing actions within Riparian Reserves. We are concerned that the 2008 USFS planning guidance has not been subject to rigorous external or scientific review, and if implemented could have harmful consequences for riparian and aquatic resources that have not been adequately evaluated or disclosed.

Weakening of the Northwest Forest Plan ACS will impact numerous listed fish, wildlife and plant species by changing the range of acceptable on-the-ground outcomes from management actions. Across the Pacific Northwest,

reduced protections for listed species and water quality via changes in the ACS would likely necessitate reconsideration of many existing agency programs and initiatives that have been premised on implementation of the 1994 ACS measures.

ACS Watershed Restoration. The ACS intended watershed restoration to be strategically identified and prioritized through *Watershed Analysis*, with particular emphasis on improving ecological conditions in *Key Watersheds*. Protection through passive restoration (Kauffman et al. 1997) of existing high-quality habitat is explicitly prioritized over active instream rehabilitation. To be effective, instream habitat-improvement projects rely on concurrent long-term riparian and catchment-scale protection and rehabilitation measures, and these must be programmatically tiered to management plans affecting each watershed. Hence site-specific active measure, such as instream habitat structures or riparian tree planting, should not be claimed to mitigate for ongoing or future harmful and degrading management actions (Frissell and Nawa 1992, Frissell and Bayles 1996, Roni et al. 2008).

Proposed Changes in Watershed Restoration Policy. In contrast, the current Senate Bill would simply allocate \$1 million annually for instream wood placement and \$5 million for road removal or “improvement” across the BLM’s O&C land area, and apparently exclude such activities from environmental analysis under NEPA. In doing so this bill would decouple active restoration measures from land management decisions. The bill would also alter the programmatic approach to watershed restoration, as discussed in the next section.

Proposed changes to ACS Key Watershed allocations. The Senate and the House bills and the BLM (2013) call for revising Key Watershed allocations in place for the past 20 years under the NFP and ACS. Many current Key Watersheds would apparently be dropped from the

allocation under the House bill, with the consequences for conservation planning and species at risk unevaluated; the Senate Bill calls for a revised watershed classification to accommodate new land allocations.

Certain revised Key Watershed delineations might in theory benefit particular populations of species such as ESA-listed coho salmon. However, the concept of prioritizing conservation efforts in Key Watersheds is undermined when watershed-scale priorities are upended and reshuffled on a time frame that is decades shorter than the amount of time expected for significant watershed restoration to occur. Effective watershed restoration requires a sustained commitment to aquatic resource protection and restoration, coupled with appropriately conditioned and scaled land management and effectiveness monitoring extending for decades to centuries (FEMAT 1993). Critical components of the ROD for the ACS include requirements for no road construction within inventoried roadless areas within Key Watersheds, and no net increase in road density within each Key Watershed. These protections for Key Watersheds would apparently be lost under the Congressional proposals, at least for those Key Watersheds that would be de-designated. Although the 2013 Senate bill would retain a process it refers to as “Watershed Analysis” its purpose appears to be inverted: it would not focus on watershed restoration, but on identifying ecological changes due to increase commercial logging over that which might occur under the default prescriptions specified in the bill.

CHANGES IN TERRESTRIAL LAND ALLOCATIONS ALSO AFFECT WATERSHED INTEGRITY

Land allocations within the NFP and other authorities, but outside of the ACS, including Late Successional Reserves, Wilderness, other congressionally designated or “administratively withdrawn” lands, and inventoried roadless areas, can confer additional protection to watersheds. These land allocations can prevent or retard road network expansion, and other disturbances, allowing natural ecosystem maintenance and natural recovery processes to proceed. They limit the spatial extent of disturbances across watershed and stream networks, and reduce the incidence or likelihood of adverse cumulative impacts. Many Key Watersheds are closely associated with such specially designated lands, though unfortunately few are largely or entirely nested such within such conservation delineations (Frissell and Bayles 1996). As a consequence, when new proposals strip away the protection conferred by Late Successional Reserves, roadless areas, or other administrative designations, watersheds are placed at greater risk of impact from forestry activities. Land disturbance from roads, logging, grazing, or other actions can undermine the benefits of restoration and land protection elsewhere

in the same watershed (Espinosa et al. 1997), depending on the geography of the watershed in question. The trade-offs of cumulative risk and potential harm to watersheds and sensitive or listed aquatic species from changes in land allocation have not been rigorously assessed in the Congressional and administrative proposals. Such trade-offs amount to a wholesale re-casting of NFP land allocations for the region that includes and surrounds the O&C lands. Each of the 2013 Congressional bills proposes to substantially re-allocate protection of older forests, generally by focusing protection on older stands rather than the more expansive Late Successional Reserves of the present NFP. Moreover the Congressional bills make special provision for thinning under nearly all land allocations, with guidelines allowing for agency-determined findings of need and some minimal requirements for tree retention. Although the NFP did not prohibit thinning or salvage logging in these areas, the legislative bills favor more extensive and intense logging and increasing fragmentation by logging roads than have previously occurred in areas now classified as Late Successional Reserves.

NEW SCIENCE THAT INFORMS AQUATIC CONSERVATION STRATEGY AND PRACTICES

In the following section we discuss some relevant new science published since the convening of FEMAT (1993). We provide selected citations and briefly summarize our view of major implications for the purpose of developing and improving an effective aquatic conservation framework. While our interpretations and recommendations focus on the ACS, many of the citation sources and their implications are derived from studies of other regions and ecosystem types out of necessity because of limited research done in the

Pacific Northwest. Just as in FEMAT (1993), relevant scientific information that is critical to define and frame topics of crucial conservation concern sometimes originates from other similar regions, and often spans a variety of disciplines.

In this paper we were not able to comprehensively address all areas of scientific advancement concerning forest management, water quality and aquatic conservation. Some topics await further elaboration. For example, we do

not comprehensively discuss the literature on impacts of logging and roads on streamflow patterns (e.g., Moore and Wondzell 2005), and subsequent effects on stream geomorphology, habitat, and biota. However, we do consider known effects of forest management and climate change on streamflows as a contributing concern under several topic headings. Most importantly, we also do not assess new science pertinent to non-aquatic and amphibian wildlife species in this report. This important work remains to be done.

Management after Wildfire, Disease, and Other Disturbances.

Salvage logging of dead or dying trees after fires, insect outbreaks, and other disturbances in Pacific Northwest forests continues to be undertaken in the region, and its effects are a recurring ecological concern (see review by Lindenmayer and Noss 2006). Soon after the NFP was adopted in 1994, the scientific community began to weigh in on the inadvisability of post-disturbance logging. Scientists have catalogued the critical importance of large standing live trees, snags, and downed wood from fallen trees in the post-disturbance recovery of natural forests, including stand successional pathways, watershed processes, and wildlife and fish habitat (e.g., Gresswell 1999, Minshall 2003). Numerous scientific syntheses provided precautionary advice against post-fire logging on a wide range of causal grounds (e.g., Beschta et al. 2004, Karr et al. 2004, Lindenmayer et al. 2004, Lindenmayer and Noss 2006, Donato et al. 2006, Noss et al. 2006). More recent work has identified the potential importance of pulses in trophic energy following high-severity wildfire (Malison and Baxter 2010) for persistence and recovery of aquatic and riparian species. This new information builds on a more longstanding recognition that wildfire, that among its many other effects, plays an important long-term role in the generation of complex wood debris structures in streams (Minshall 2003). Other reviews focused on plant and landscape ecology broadly call into question the effective-

ness of salvage logging insect-infested trees to control insect outbreaks (e.g., Black et al. 2013, Six et al. 2014). Similar concerns about the consequences of salvage logging curtailing natural ecosystem recovery processes pertain to salvaging of stands affected by any natural mortality agent, such as windthrow or volcanism.

However, post-disturbance logging was not expressly ruled out in the NFP and ACS, and the political demand for salvage logging remains high, so large post-fire salvage logging projects have been pursued by the USFS and BLM in many areas, including on occasion within Key Watersheds, Riparian Reserves, Late Successional Forest Reserves, and designated critical habitat of listed species (see DellaSala et al. 2014). Scientific consensus on the inadvisability of post-disturbance logging largely emerged in the years just after FEMAT, hence the ACS should be strengthened to reflect such sources as the recommendations in Beschta et al. (2004), Karr et al. (2004), and Black et al. (2013).

We conclude that for maintenance of forest ecosystem integrity, *post-disturbance logging should be prohibited in Riparian Reserves, Key Watersheds, Late Successional Reserves, and other areas where conservation is a dominant emphasis. Post-disturbance actions should prioritize road decommissioning or systemic road drainage improvements, and suspension of livestock grazing to reduce harm under the increased hydrological stresses expected in post-fire forests and their aquatic and riparian habitats and biota.*

Forest Thinning Intended to Reduce Tree Density or Wildfire Fuels.

Current ACS language allows the agencies to “apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain...objectives.” The agencies carry a project-specific burden to establish

the need for thinning and that outcomes are ecologically restorative. Recently the USFS and BLM have pressed to increase in the average size of thinning projects apparently to reduce the number and cost of site-specific environmental analyses by broadening their scope. Agency initiatives presume extensive use of mechanical harvesting methods in conjunction with commercial timber sales to thin trees in Riparian Reserves and other areas where conservation values are given highest priority. In wetter forest types, the primary claim that thinning is restorative rests on the assumption that the growth rate and vigor of those trees left alive after thinning will likely improve, thereby hastening the future development of larger-sized trees in the stand. In drier forests, the primary rationale is that thinning is needed to promote a generalized reduction in fuel loads, thereby presumably reducing the risk, or severity, or rate of spread, of wildfire and that thinning can increase fire resistance of selected individual trees.

Regardless of silvicultural intent, mechanized treatments in Riparian Reserves can disturb vegetation and soils in close proximity to surface waters, where the risk of sediment delivery and other impacts is demonstrably high (Rashin et al. 2006, Dwire et al. 2010). Logging activity that disturbs soils within riparian buffers can also reduce the buffer's effectiveness to retain sediment and nutrients delivered from upslope sources. Thinning or other disturbance of coniferous or deciduous trees and shrubs within riparian and wetland areas can cause decades of diminished summer low flows (after an initial few years during which low flows may increase), as a consequence of increased water demand by rapidly re-growing vegetation (Hicks et al. 1991, Moore and Wondzell 2005). In addition, thinning and yarding of logs from near-stream areas requires or encourages the construction of roads in close vicinity to streams, where the likelihood of sediment delivery and other impact from roads is increased (Luce et

al. 2001). Bryce et al. (2010) found that for sediment-sensitive aquatic vertebrates and macroinvertebrates, minimum-effect levels for percentage fines were 5% and 3%, respectively, meaning that even small increases in fines can adversely affect salmonids and their prey.

Mechanized thinning and fuels operations usually require higher-density road access to be feasibly implemented. Mechanical treatments for fuels reduction are particularly problematic because recurring entries at roughly 10-year intervals are necessary to sustain the desired conditions (Martinson and Omi 2013); such a forest management regime strongly favors, if not requires, a permanent, high-density road network. Many thinning projects involve road and landing construction and reconstruction, as well as elevated haul and other use of existing roads, all of which significantly contribute to watershed and aquatic degradation. Even if constructed roads and landings are deemed "temporary," their consequent impacts to watersheds and water bodies are long lasting or permanent. The hydrological and ecological disruptions of road systems and their use (Jones et al. 2000, Trombulak and Frissell 2000, Gucinski et al. 2001, Black et al. 2013), exacerbated by other effects of vehicle traffic, will likely outweigh any presumed restorative benefit to streams and wetlands accruing from thinning and fuels reduction. In recent years, the prospect of future thinning or fuels reduction projects often has become the basis for the USFS or BLM to avoid or delay decommissioning environmentally harmful roads, even when fiscal resources were available for the work. Prescribed fire without extensive mechanical treatment is of much less concern, as it is more feasible to apply in sparsely-roaded wildlands, entails far less soil disturbance, and if conducted in proper times and places it can more adequately mimic the ecological effects of natural wildfire.

Substantial questions remain about the putative ecological benefits of thinning and

fuels reduction. This is critical because agency proponents commonly argue that the desired ecological benefits outweigh the adverse environmental effects of logging and fuels treatments. Dispute among federal agencies about claimed ecological benefits of thinning in moister, Douglas-fir-dominated forest types (widespread in the Pacific Northwest) led to an interagency scientific review in 2012-2013 (Spies et al. 2013). That panel concluded that increased tree growth might be better obtained from thinning very young, high-density stands—which very seldom produces commercially saleable logs. They further concluded that thinning produces unusually low-stem-density forests and causes long-term depletion of snag and wood recruitment that is likely detrimental in most Riparian Reserves (Spies et al. 2013, and see Pollock et al. 2012, Pollock and Beechie 2013). Further depletion of wood recruitment in headwater streams can adversely affect the behavior of debris flows in Pacific Northwest watersheds in ways that further reduce residual wood debris and its important functions over extensive portions of streams and rivers (May and Gresswell 2002), where present-day wood abundance is decimated compared to historical conditions (Sedell et al. 1988, Pollock and Beechie 2014). Finally, recent reviews also raise compelling, unanswered questions about the effectiveness of thinning forests for attempted control of insect outbreaks (Black et al. 2013, Six et al. 2014).

The effect of thinning on fire behavior and effects within riparian areas has been little studied. For western North American forests in uplands the literature is replete with ambiguous and conflicting results regarding the effects of thinning and other mechanical fuels treatments on fire severity, rate of spread, and recurrence. Moreover, the probability of a fire burning through a treated stand within the limited time window of potential effectiveness of a fuels treatment has been shown to be very small (Lydersen et al. 2014, Rhodes and Baker 2008). Any presumed benefit is

even less persistent in Riparian Reserve areas where woody vegetation regrows rapidly after treatment, and where in moister forest types fire tends to recur with lower frequency. Equally important, we question whether managers should be striving to reduce fire severity in riparian areas as a rule, considering that high-severity fire plays a natural and historical role in shaping riparian and stream ecosystems (Gresswell 1999, Minshall 2003, Benda et al. 2003, Malison and Baxter 2010). Other natural forest disturbances, including windthrow, insect outbreaks, and landslides on forested slopes, appear to play a similarly important role in generating pulses of wood debris recruitment to streams, establishing a long-lasting source of ecological and habitat complexity.

Considering the difficult-to-justify costs and recognized inherent risks of adverse impact associated with such operations in sensitive areas, balanced against the uncertainty in intended benefits, we conclude the following: *Thinning and fuels reduction by means of mechanized equipment or for commercial log removal purposes should be generally prohibited in Riparian Reserves and Key Watersheds. Any thinning or fuels treatment that does occur as a restorative treatment in Riparian Reserves (e.g., to remove non-native tree species from a site) should retain all downed wood debris on the ground. Thinning projects that involve road and landing (including those deemed “temporary”) construction and/or reconstruction of road segments that have undergone significant recovery through non-use should also be prohibited, due to their long term impacts on critical watershed elements and processes.*

Road Networks and Their Management.

Roads are ecologically problematic in any environment because they affect biota, water quality, and a suite of biophysical processes through many physical, chemical, and biological pathways (Trombulak and Frissell 2000, Jones et al. 2000, Al-Chokhachy et al. 2010).

The magnitude of existing road impacts on watersheds and streams in the Plan may equal or exceed the effect of all other activities combined. Firman et al. (2012) reported that density of spawning coho salmon across coastal Oregon streams was negatively associated with road density. Kaufmann and Hughes (2006) found that road density in Coast Range streams was associated negatively with 25-50% of the variability in condition of aquatic vertebrate assemblages. More recently, Meredith et al. (2014) showed that the abundance of habitat-forming wood in Columbia Basin streams declined with proximity to roads, and the effect was roughly the same magnitude as that of natural climate and vegetation differences or long-term livestock grazing.

Roads are necessary to support logging, mining, grazing, and motorized recreation, but the existing federal forest road system far outstrips the extent of those demands. The number and poor condition of USFS and BLM roads, the agencies' inability to prevent current roads from deteriorating and harming streams, and the pervasive effects of roads on the physical and biological environments were recognized in FEMAT (1993). In addition, forest roads have been the subject of high-profile national dialogue and policy reviews since the development of the Plan (Gucinski et al. 2001, Pacific Rivers Council 2008). The ACS's primary means of protecting streams from roads and encouraging effective restoration are twofold: First, ASC objectives discouraged locating roads within Riparian Reserves, and second, roadless areas were to be maintained and overall road density reduced in Key Watersheds. For a small number of Key Watersheds where road network reduction has been pursued, agency monitoring efforts have reported improvements of certain instream habitat conditions, a response not detected elsewhere (Gallo et al. 2005, Reeves et al. 2006a). Often overlooked is that proposals to reduce the size of Riparian Reserves could provide more free rein for the construction of roads and landings in closer

proximity to streams, markedly increasing the likelihood of sediment delivery and alteration of near-stream hydrology.

How to substantially reduce road density in critical watersheds and improve road drainage, stream crossings, and other factors that affect streams and aquatic biota, while maintaining sufficient roads for other forest uses, remain central challenges to forest planning and management. The ACS and other operative policies have lacked sufficient means and impetus to accomplish this in the past 20 years. We therefore suggest five policy changes to achieve needed road reductions: 1) *Prohibit the construction of new permanent and "temporary" roads*, except in limited instances where construction of a short segment of new road is coupled with and necessary for the decommissioning of longer and more damaging segments of existing road. 2) *Allow no net increase in road density in any watershed*. New "temporary" roads and landings should be considered to be roads and counted towards road density levels for at least several decades after decommissioning. 3) *Strengthen road density restrictions for Key Watersheds and establish unambiguous standards and metrics for net road density reduction, which include adequate accounting for landings and the impacts of so-called "temporary" and decommissioned roads and landings*. 4) *Improve the system of classification (e.g., road type, use) and inventory (e.g., whether a road is active or decommissioned), and mapping (i.e., update maps to reflect current conditions)* to ensure that agency bookkeeping of road miles corresponds with actual field conditions. This provision is necessary because at present many roads "disappear" when dropped from the inventory, but they in fact remain on the landscape causing watershed impacts. Also, lax road mapping programs and narrow definitions of what constitutes a road can significantly under represent the actual road densities. 5) *Require each proposed forestry and other development project to meet a target of incremental reduction of the road system in*

all watersheds affected by the project. Road density reduction should be required until road density in the affected watershed is lower than the target established on the basis of biological response.⁴ Finally, 6) *roads for which there are not adequate funds for maintenance and upkeep should be decommissioned.*

Riparian Reserves for Protecting Stream Temperature.

Conservation (including restoration) of natural thermal regimes of streams and rivers was but one of many factors considered when ACS default riparian reserve widths were determined in the initial design of the ACS. In recent years the land management agencies and others have commonly assumed shade from riparian vegetation is the predominant proximate control on stream temperature, and some research has suggested that trees within 30 m or so of the stream margin contribute over 90 percent of the effective shade (e.g., Reeves et al. 2013). Furthermore, it has been suggested that headwater streams that do not carry water in summer should presumably not need shade to conserve summer thermal maxima in downstream waters. These two premises have become a primary rationale for proposals by BLM and in congressional bills to reduce default Riparian Reserve widths for some stream types, with the intent of increasing the area of Matrix land or equivalent that is subject to commercial logging. From the perspective of temperature protection, we have four concerns with this rationale for shrinking Riparian Reserves.

⁴ E.g., 1 mile per square mile (0.62 km per square km) for watersheds with Pacific salmon, steelhead and cutthroat trout (Lee et al. 1997, Thompson and Lee 2000, Carnefix and Frissell 2009), and 0.5 miles per square mile for watersheds supporting bull trout (USFWS 1999; Baxter et al. 2000, see Fig 5 and Appendix, showing that population growth remained negligible in streams with higher road densities; and Ripley et al. 2005, Fig. 5 showing that probability of bull trout occurrence in Alberta tributary streams dropped by half where road densities exceeded about 0.6 miles per square mile).

First, *redundancy*: most current analyses rest on a static view of riparian stand structure and function—that is, shade is modeled as a nearest single layer function of the existing standing trees only. The tree nearest to the stream margin is attributed as the contributor to shade, even though one or more trees standing behind it, slightly farther from the stream, may contribute shade as well. But when trees fall or die in the so-called “inner zone,” then the “outer zone” trees become a replacement source of shade. Obviously, if the outer zone trees have been logged, that functional redundancy is lost and any riparian disturbance, man-made or natural, may lead to incrementally reduced stream surface shade—and an increase in stream temperatures.

Second, *density*: whereas we measure canopy shade with fixed-resolution instruments, little is known about how measurements of shade translate to actual solar penetration. In the coarsest sense, a canopy densiometer is used to visually estimate canopy cover with only 17 sample points that are irrespective of solar path. Even more quantitative instruments, such as the Solar Pathfinder or SunEye have the tendency to overlook the value of small canopy gaps or multiple canopy thickness in reducing light intensity reaching the stream, as does the densiometer. “Redundant” tree canopies create a shade structure that is dense compared to that of a single tree, and this may substantially affect the actual solar energy reaching the water surface in ways that we that we seldom adequately measure.

Third, *groundwater*: thermal response is affected in numerous ways by near-surface groundwater, which affects both surface streamflow rate and the temperature of water at the point of delivery. After initial increases in base flow following logging, summer base flow can decline for many years as a consequence of rapidly re-growing second-growth vegetation and its evapotranspiration demand (Hicks et al. 1991, Moore and Wondzell 2005). Logging in the outer areas of Riparian Reserves or forest-

ed wetlands can contribute to or conceivably magnify this effect. Accordingly, in some Pacific Northwest watersheds, stream temperature is more strongly associated with catchment-wide logging than with streamside vegetation cover (Pollock et al. 2009). Stream warming in such watersheds (often containing gently sloping or hilly terrain and numerous forested wetlands) could be influenced by reduced canopy shade over large areas of near-surface groundwater. Warming also could be influenced by changes in shallow groundwater flux rates and the level of the water table (Poole et al. 2008). Hence, stream temperatures in some circumstances can become warmer at their point of origin (in spring, summer and fall) following watershed logging. Other research has established the importance of the hyporheic flow exchange in determining surface water thermal regime (Poole and Berman 2001, Baxter and Hauer 2001, Poole et al. 2008). The hyporheic zone may include extensive areas of shallow subsurface flow within montane alluvial valleys. In summer this subsurface pool may be dominated by spring snowmelt or cool rain runoff that cools surface streams when it discharges in midsummer (Poole and Berman 2001, Wondzell 2011). The extent of hyporheic storage and exchange bears a somewhat uncertain relationship to surface landforms, and until the decades after FEMAT, land management agencies lacked both the methods and incentive to accurately map these critically important areas (Torgersen et al. 1999, Baxter and Hauer 2001, Ebersole et al. 2003, Poole et al. 2004, Poole et al. 2008, Torgersen et al. 2012). Sediment accumulation in streambeds, or loss of step pools and other structures contributing to channel complexity—often formed by stable large wood—is thought to reduce entrainment of surface flows into, hence flow exchange with, the hyporheic zone (Moore and Wondzell 2005, Poole et al. 2008).

Given these uncertainties, and the increased importance of such groundwater source areas under future climate changes, any manage-

ment change that increases the areal extent of logging in watersheds poses a risk of contributing to undesired stream warming. Notably, winter and spring stream temperatures can be of comparable importance to summer temperatures in meeting the habitat needs of species. In particular, temperatures of seasonably intermittent streams (even though they may be non-fish-bearing in summer or support salmonids only in early summer) can be important for salmon and other species in winter and spring (Wigington et al. 2006), and are directly and indirectly influenced by riparian canopy shade, thermal insulation, and other forest conditions that mediate water temperature fluctuations.

Fourth, *channel migration*: over time, stream channels migrate and even small streams have secondary channels that may flow only during the rainy season. However, existing side channels and backwaters provide important rearing and refuge habitat for salmonids, and they are commonly unmapped or mapped poorly. In addition, if riparian buffers are narrowed, some of these channels may migrate outside the narrowed buffer and be exposed to direct sunlight and substantially warmed. For instance, the sources of LWD are impaired during channel migration where outer zones have been harvested. Washington state and private forest practices rules have included criteria designed to identify and protect channel migration zones for many years (Brummer et al. 2006); in the ACS, explicit rules for their delineation are left to watershed analysis.

Considering the multiple ecological factors and processes that affect stream temperature and considering that temperature conservation is but one of many significant functional factors influenced by streamside forests, we find no sufficient scientific support for reducing current ACS Riparian Reserve default widths for any stream type. In many watersheds and stream segments, larger areas of forest protection are warranted to prevent warming of

shallow groundwater, particularly given likely trends future climate change, and the expectation of increased influence of wildfire and other “unmanaged” forest disturbances (Westerling et al. 2006).

Riparian Reserves and Nutrient Retention.

The role of forested riparian buffers in retaining nutrients mobilized by upslope disturbance, or delivered to watersheds in precipitation and fertilization, is globally recognized. Forested buffer zones are commonly prescribed to reduce nutrient delivery to streams in agricultural landscapes (Sweeney and Newbold 2014). Logging and fuels management treatments that disturb green vegetation generate increased nitrogen leaching from forest soils that enters streams and wetlands by both surface and subsurface flow paths (Wenger 1999, Gomi et al. 2002, Kubin et al. 2006). Any ground-disturbing activity or condition (such as a road network) tends to mobilize phosphorus in association with soil erosion. Logging disturbs vegetation and soils over large areas, and scaled over large landscapes or river basins, initial disturbance of forested lands tends to generate larger net increases in nutrient loading than repeat disturbances of already-altered agricultural or urban lands (Wickham et al. 2008; note this observation is from a large population of monitoring sites and remains true even though agricultural lands are commonly more heavily fertilized than forest lands). Over time, nutrient loading to headwater streams transfers downstream, where nutrients accumulate in rivers, lakes, estuaries, and nearshore marine ecosystems (Freeman et al. 2007). For all of these reasons, forestry operations have been identified as a major contributor to nutrient loading, eutrophication, and associated impairment of water quality in Pacific Northwest lakes (Blair 1994, Dagget et al. 1996, Oregon DEQ 2007), rivers and estuaries (Oregon DEQ 2007).

Cumulative nutrient impairment of downstream receiving waters can occur without

violation of nutrient standards in headwater streams, simply as a consequence of sustained increases in loading from storm water runoff from forest roads and periodic logging. In effect, logging alters the entire regime of nutrient and sediment export, and nutrient losses to surface waters are endemic and widespread consequences of logging and other disturbance of forested watersheds.

The question of what role Riparian Reserves play in nutrient retention has received insufficient consideration in the Pacific Northwest. Research on the nutrient retention efficiency of various forested buffer widths from the Upper Midwest and other regions (Nieber et al. 2011, Sweeney and Newbold 2014) suggests that average phosphorus and nitrogen retention is around 80% for undisturbed buffer zones of 30 m (100 feet) wide. Extrapolation suggests that buffers of 45 m (150 feet) or greater might be necessary to attain 90-99 percent retention of nutrients mobilized by upslope disturbance. These distances are likely too small for Pacific Northwest forests, where slopes are steeper, soils tend to be more porous, and macropores or channeled flow from uplands are more common than in the Midwest (all factors identified in Nieber et al. [2011] as reducing retention efficiency).

By virtue of their high density of surface channels across most mountainous landscapes, headwater streams with seasonal flow receive a large portion of the nutrients mobilized by up-slope disturbance (Gomi et al. 2002, Freeman et al. 2007). Therefore, full protection of wide Riparian Reserves along even the smallest stream channels (and surface-connected wetlands) is likely necessary for effective nutrient retention when surrounding uplands are disturbed. Channel network expansion from gully erosion (Reid et al. 2010) or roads (Wemple and Jones 2002) and channel simplification through loss of woody debris or sediment increases also reduces retention efficiency of nutrients, sediment, and organ-

ic matter in headwater systems. Moreover, thinning or other disturbance of vegetation or soils within the Riparian Reserve could short-circuit the benefit of riparian forest buffers, by creating a near-stream source of nutrients that is not fully mediated by the retention capacity of the default-width riparian zone.

Although more research is needed in the Pacific Northwest on nutrient retention, current scientific knowledge is sufficient to justify three recommendations. 1) *Continuous, no-cut Riparian Reserves exceeding 50 m (160 feet) along all streams and wetlands are generally needed to mitigate the effects of up-slope logging on nutrient loading to both freshwater ecosystems and downstream marine environments.* 2) *Cessation of livestock grazing in Riparian Reserves, road network reduction, and reconfiguration of remaining roads to reduce their hydrologic connectivity to surface waters are needed to reduce downstream nutrient loading.* 3) *Analysis of the effects of management actions on nutrient loading to immediate downstream receiving waters, including lakes, wetlands, reservoirs, mainstem rivers, estuaries, and the nearshore marine, are needed in environmental assessments, environmental impact statements, watershed analyses, and ESA consultations for aquatic species.*

Livestock Grazing. Whereas forestry predominates in the Northwest Forest Plan area, grazing affects a significant portion of the area as well; for example, 22 percent of BLM lands were subject to livestock grazing in the early 2000s (BLM 2008). A larger area was affected by historic grazing, where soil impacts may persist. Livestock grazing has large impacts on streams (Al-Chokhachy et al. 2010) because livestock tend to concentrate in streams, floodplains and alluvial valleys (see Beschta et al. 2013 for a recent synthesis). Besides direct disruption of wetlands and streambeds, and the suppression of woody vegetation, soil compaction by grazing in both riparian and upland areas degrades runoff quality and

adversely alters flow regimes and watershed functions such as soil water storage and nutrient retention.

In addition to these direct impacts, new research shows that managing for livestock can indirectly alter ecosystem trophic cascades. For example, livestock depredation on open range led to programs to extirpate large native carnivores. Reduced numbers of carnivores release native ungulates and other herbivores from predation, leading to declines of riparian vegetation and stream conditions even outside of livestock-grazed areas (Beschta and Ripple 2012). Removing livestock grazing from federal lands has high potential to increase the resilience of watersheds and streams to environmental stresses, including climate change (Beschta et al. 2013, 2014). Measures to reduce the ecological impacts of livestock grazing, primarily by fencing streamside areas and moving cattle frequently from site to site, have met with variable success (Rhodes et al. 1994). Implementation of these methods is limited by the high capital cost of building and maintaining extensive fencing, the wages of field personnel to manage herds, and the cost of necessary environmental review and monitoring. Livestock grazing in forests is a commercial use that is not restorative, and often is marginal economically. We conclude that *livestock grazing should be excluded from Riparian Reserves, Key Watersheds, and other lands where conservation is the primary management objective.*

Chemical Use in Forests. Only very recently has science begun to directly tackle the difficult questions of fate, effects, and toxicity of pesticides and other chemicals associated with forestland uses on stream biota. Toxic contaminants come from various sources, including storm water runoff from roads (particularly those that discharge directly to surface waters pipes and ditches) (McCarthy et al. 2008, Feist et al. 2011). Herbicides are applied to tree plantations and roadsides to

control unwanted vegetation. Until recently these activities were limited by court order on BLM and USFS lands, but now they are increasing in extent and frequency, as well as continuing on adjacent private forest lands. The NMFS is reviewing the science concerning potential harm to listed species of Pacific salmon from application of commonly used pesticides. For example, use following label restrictions of the herbicide 2,4-D was determined to jeopardize Pacific salmon (NMFS 2011). Forest fire retardants that are aerially dropped in large quantities during wildfire suppression operations often reach surface waters, where they may be toxic to salmonids (Buhl and Hamilton 1998, Gaikowski et al. 1996).

While the science on toxic chemicals is certainly advancing, we have five interim recommendations based on existing knowledge: 1) *Minimize application of chemicals for forest management purposes in time and space*; for example, hand-application should be favored over aerial application when there is no feasible alternative to pesticide use. 2) *Weigh the full range of environmental trade-offs between the perceived benefits of chemical use and its possible harms in each case before a decision is made to use chemicals in forest management*. 3) *Implement wide, un-thinned forested buffers in Riparian Reserves to help reduce exposure of fish and aquatic life to toxic chemicals*. Thinned or narrow buffers can allow greatly increased aerosol penetration (chemical) from slopes to streams, and narrower buffers may also allow more transport of toxins in runoff. 4) *Reduce road density and the hydrologic connectivity of roads to surface waters to help control toxins that originate from road use and maintenance, as well as those that are applied up-slope but find their way to streams via surface runoff*. 5) *Analyze the possible effects of management actions in affecting the delivery of toxic chemicals to streams in every NEPA document and ESA consultation*.

Climate Change: Consequences and Adaptation. Anticipated climate change will alter the

way we expect ecosystems to respond to forest management actions (Dale et al. 2001, Mote et al. 2003). In general for this region, hydrologic model predictions stepped-down from regional and global circulation models project increased stream and lake warming (varying magnitude across the seasons); more intense winter precipitation events, including flood and wind disturbance of riparian forests; earlier snow pack melting except for the highest elevation watersheds; and likely increased intensity and duration of droughts (Battin et al. 2007, Dalton et al. 2013). In very general terms, most climate change scenarios suggest larger and higher severity wildfires than seen in recent decades, and generally elevated evapotranspiration that could further reduce low summer streamflows. Luce and Holden (2009) documented a widespread pattern of declining summer streamflow over recent decades at gauging stations across the Pacific Northwest.

Climate changes will likely exacerbate existing (ongoing) trends in watershed degradation by affecting key processes or factors (stream thermal regimes, surface flows, groundwater and floodplain connectivity, landslide rates, fuels, fire, invasive species, and post disturbance human responses, to name but a few). Most climate change adaptation strategies call for strategic removal of non-climate stressors, because these will likely be more tractable or remediable than climate stressors (ISAB 2007, Furniss et al. 2010). No formal review of the ACS has apparently been conducted by the USFS or BLM to determine what, if any, science-based changes to the ACS best address future climate scenarios. It seems unlikely, however, that even a cursory review of the climate literature would lend support to proposals to remove or diminish currently protective provisions of the ACS.

The current ACS requirements are integral to assuring streams, wetlands, and other water bodies have the best possible resilience in the face of increasing climate stress. Extensive forested north-facing slopes can moder-

ate some climate influence on watersheds, and localized springs, and extensive shallow alluvial aquifers that store water seasonally can moderate summer streamflows and both summer and winter temperatures (Poole and Berman, 2001, Isaak et al. 2010, Wondzell 2011). Complex natural riparian vegetation communities and natural accumulations of large wood (resulting in concentrations of stored sediment) in and near floodplains are instrumental in creating and maintaining conditions that support hyporheic flow exchange. Wide Riparian Reserves provide not only shade, but essential protection and support for the natural processes that maintain and regenerate the suite of hydrologic and geomorphic elements that help buffer streams against climate forcing.

Intact watersheds are often seen to be less vulnerable to storms, floods, droughts, wildfire, and other extreme events, and are expected to be more resilient to future climate change than highly altered watersheds. Streams and rivers affected by reduced alluvial groundwater storage and diminished hyporheic buffering, fragmentation and loss of biological habitat connectivity, and a less intact native biota, are likely to respond more quickly and with greater volatility to climate change, as are engineered systems such as roads and dams. Watershed resilience in the face of climate change can best be maintained by protecting and restoring the suite of natural processes and conditions that characterize natural forested riparian areas and floodplains (Seavy et al. 2009, Furniss et al., 2010). This is exactly what the ACS was originally designed to accomplish. Whittling away riparian protections on the basis of narrowed, single-factor considerations such as proximate stream shade undermines the comprehensive protection of stream and riparian processes that the ACS was designed to maintain and restore. Finally, under changing climate, some management practices that seemed to produce desirable outcomes in the past may not do so in the future. For example, the putative effectiveness of forest thinning at altering fire behavior could become even more uncertain if weather

extremes become more of a top-down driver of fire behavior (see Martinson and Omi 2013) in future climates (Dale et al. 2001, Westerling et al. 2006).

Our overall recommendation is that 1) *ACS protections for Riparian Reserves should be sustained and strengthened to better protect and restore natural ecosystem processes that confer resilience to climate change*, as detailed in our other recommendations. In addition, 2) *an interagency scientific conservation design effort is needed to expand and reconfigure some present Key Watersheds to ensure they better encompass specific areas that are likely to be topographic and hydrologic buffers to future climate change impacts*. Finally, we recommend that 3) *the direct and indirect effects of management actions on the integrity and capacity of stream and watershed ecosystems for resilience to climate change be analyzed in every environmental assessment, environmental impact statement, watershed analysis, and ESA consultation*.

Monitoring and Adaptive Management.

Environmental monitoring data often prove to be useful, but we cannot always anticipate how those data will be useful. Monitoring can be especially valuable when coupled with available data from historical records and time series sampling (such as streamflow gauging and temperature recorder data strings) (Wissmar 1993, Wissmar and Beschta 1988). Substantial progress has been made in the past 20 years on sampling design and methods of data collection for monitoring streams, watersheds and regions of watersheds (Steel et al. 2010). Twenty years after FEMAT, there are greatly expanded technological capabilities for spatially explicit data reporting and analysis, and numerous and increasingly robust methods to integrally evaluate considerations of ecological scale, geographical context, spatial and temporal continuity, and biological connectivity in data design and analysis.

The Northwest Forest Plan designated large

Adaptive Management Areas where alternative means of management and conservation might be implemented and closely monitored. For many reasons this option failed. Public involvement was required, but in most cases the public could not agree on the need for trial and testing of specific management hypotheses (Gray 2000). Managers and scientists also sometimes disagreed on hypotheses to test or what practices should be implemented. Lacking coherent large-scale experimental proposals drawing broad social support, funding never materialized. These failures are by no means endemic to the NFP—they characterize many, if not most aspirational attempts at formalized, large-scale adaptive management (Walters 1997).

We note, however, that ongoing management across multiple ownerships and with a multitude of natural background conditions creates a broad array of natural experiments that already exist on the landscape. Scientists can probably continue to learn much of what we need to know by creative monitoring of extant natural experiments. However imperfect they may be, natural experiments are more beneficial than waiting for planned, large-scale experiments that have proven exceedingly difficult to execute (and are almost always far from ideal themselves in terms of design and resources).

The existing monitoring program for aquatic resources in the Northwest Forest Plan area (Aquatic and Riparian Effectiveness Monitoring Program, AREMP, <http://www.reo.gov/monitoring/reports/watershed/aremp/aremp.htm>) in our view is constrained by certain design and sampling protocols that limit AREMP's capacity for drawing inferences about changes in habitat condition, living system condition, and biophysical processes over time. Whereas AREMP is intended by design to detect trends in some riparian or stream conditions over large areas, interpreting causal relations for responses requires

information about changes in physical conditions and biota at specific locations over time. Further, AREMP design is based on delineated hydrologic units some of which do not represent hydrographically complete watersheds; this confounds identifying linkages between watershed condition and stream biotic and physical responses (Omernik 2003). Considering the scope of natural and man-caused variability in the field, Anlauf et al. (2011) suggested that AREMP incorporates a statistically insufficient number of sites to yield useful confidence intervals needed for reliable assessments of many measures of stream condition. Effectiveness monitoring generally fails when the design or data preclude process or cause-effect inferences, or when assumed fundamental relationships between habitat indices and biological populations and assemblages remain untested. Outside of the specific confines of AREMP, some useful new understanding has emerged from regionally extensive monitoring programs on federal lands in the Pacific Northwest (e.g., Hough-Snee et al. 2014, Meredith et al. 2014). In our view, these studies, far more specifically than AREMP, focus on iterative explicit hypotheses about cause-and-effect relations to inform the query and analysis of field survey data

We recommend three policy shifts in how monitoring is employed under the ACS. First, as a standard management practice, require *some form of effectiveness monitoring and expert review of stream and watershed responses for every forestry, range, mining, recreation development, or active management project*. Every project that could potentially affect watershed and stream conditions should integrally include collection of a field data set that sheds some light on key post-project biophysical conditions influenced by the project. Agency actions should help to increase the certainty of outcomes at particular sites. Agencies should first engage experts that could check collective awareness of the reliability of conventional assumptions about the effects of manage-

ment actions. Expert's perspectives would and increase the likelihood of the agencies identifying unanticipated outcomes that warrant broader study and management consideration. Expert review of project outcomes is needed to discourage the institutional habitat of assuming *a priori* that project outcomes are more certain and unequivocally beneficial than they often are.

Secondly, agencies should review existing programs of comprehensive regional and watershed-scale effectiveness monitoring programs, and develop comprehensive monitoring strategies to optimize return on the capital investment in monitoring. *We call for an interagency scientific panel to review the status and effectiveness of trend monitoring efforts, and identify data sets that could be useful in drawing inferences for improved monitoring programs.* New monitoring programs should be capable of assessing the effects of management actions and climate change on aquatic ecosystems and biological resources associated with BLM and USFS lands. They should be robust to both anticipated and unanticipated environmental changes.

CONCLUSIONS

In this report we examine selected new and emerging science that is relevant to the future of the ACS, and touch on concepts that should be integral to whatever might replace the ACS in the future. We believe more exhaustive consideration of the topics we raised--and a broadened consideration of others, including the functions of riparian and watershed reserves for conservation of terrestrial wildlife species--will only strengthen our conclusion that the founding rationale, basic architecture, and core conservation elements of the ACS remain sound. We also maintain that some specific improvements in ACS protection and conservation provisions are warranted.

New science raises many concerns about the adequacy of implementation of the ACS by the

Third, agency-driven improvements in monitoring programs should include *increased emphasis on tracking ecological conditions, including explicit biological condition measures, and the ability to establish with some certainty that trends in Key Watersheds result from specific management actions or choices (which may include deferral of active management).* Key Watersheds are especially critical for the medium- and long-term conservation success of the ACS, and may be disproportionately important to the survival and recovery of ESA-listed and other sensitive species. The special need to focus sustained time-trend effectiveness monitoring in Key Watersheds again raises the concern that re-delineation of Key Watersheds with each new piece of legislation or management planning cycle could disrupt long-term monitoring efforts. Pursuant to our third recommendation, we also recommend that agencies retain some degree of flexibility in allocation of monitoring resources to allow for occasional more directed and intensive investigation where assessments indicate that surprising and ecologically important outcomes have occurred.

federal agencies. These issues include including post-fire and other logging after disturbances, logging and fuels treatments in riparian areas, the degree of riparian protection for headwater streams, the adequacy of past efforts for road system downsizing and remediation, the adequacy of conservation priorities for and delineations of Key Watersheds, the effectiveness of grazing management, and whether current monitoring is as useful as it should be.

This report raises concerns about anticipated climate change. While climate change does not fundamentally alter the basic facts of good conservation and responsible management, it both theoretically and materially raises the level of concern about many specific management issues, including the potential effective-

ness of restoration actions, the effectiveness of riparian areas as stream buffers, and implications for the burden of proof for management actions that balance known environmental problems against presumed restorative benefits. Most watersheds in the region are of mixed federal and other ownership. Because progress in protection and restoration on private lands has been limited (Stout et al. 2012), federal lands will likely continue to be the focus of watershed protection and aquatic habitat conservation, and related climate change initiatives for the foreseeable future.

Finally, an improved monitoring program will be necessary to ascertain that conservation of aquatic ecosystems and resources is in fact occurring, especially in the face of increasing physical and biotic stresses imposed by changing climate and human population growth. It will be of continued or increasing importance to evaluate the degree to which Riparian Reserves can serve as effective buffers against the cumulative effects of logging,

roads, and other disturbances on forest lands catchment-wide. This question has assumed greater importance as research in disturbed ecosystems worldwide has demonstrated that watershed condition can sometimes affect fish assemblages more strongly than does riparian condition (Roth et al. 1996; Wang et al. 2003; 2006; Sály et al. 2011; Marzin et al. 2012).

We conclude that attempts to reduce protections to watershed, riparian, and freshwater ecosystems by weakening major components of the ACS and other related conservation elements of the Northwest Forest Plan are not justified by new and emerging science. Improved ecosystem protections--and better monitoring of outcomes--are warranted across all land ownerships, including federal forest lands, if freshwater ecosystems and their biota, including salmon and other sensitive species are to be effectively conserved in an era of increased ecological stress and changing climate.



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Comments on the Programmatic Environmental Impact Statement (EIS) to expand the list of approved herbicide active ingredients (herbicides) to treat noxious weeds and other invasive species on Bureau of Land Management (BLM)-managed public lands

August 3, 2015

These comments are submitted on behalf of Alaska Community Action on Toxics, a statewide non-profit public interest environmental health research and advocacy organization dedicated to protecting public health.

Alaska Native peoples depend on the harvest of berries, medicinal plants, fish and wildlife for spiritual, cultural and physical sustenance. They depend on the lands and waters for the safe harvest of traditional subsistence foods. And non-Native Alaskans also depend significantly on the harvest of plants, fish, and wildlife. We are therefore concerned about the proposed use of herbicides, including the proposed new herbicides by the BLM and potential harm to public health.

Herbicide applications are designed to destroy the growth of plant life and are toxic to the environment because they adversely affect non-target plants, animals, and people. The use of herbicides, including aminopyralid, fluroxypyr, and rimsulfuron, will have detrimental effects to non-target plants, wildlife and people. Herbicide chemical treatments will have a detrimental effect on the lands, waters, and air as well as fish and wildlife resources that people rely on for hunting, fishing, and gathering for their daily food. [Environmental Consequences, General – 35-01] These herbicides may harm the health of people who are reliant on traditional foods and medicinal plants. [Environmental Consequences, Paleontological and Cultural Resources – 35-02] The use of herbicides violates Article 29 of the United Nations Declaration on the Rights of Indigenous Peoples to ensure that disposal of hazardous materials shall not take place in the lands and territories of our Indigenous peoples without their free, prior and informed consent. [Proposed Action and Purpose and Need, Relationship to Statutes, Regulations, and Policies that Influence Vegetation Treatments – 35-03] We believe that there are effective and viable alternatives to the use of herbicides for vegetation management. [Proposed Action and Purpose and Need, Scope of Analysis – 35-04] We find that BLM does not provide justification for the use of the proposed new herbicides nor does the agency provide an adequate alternatives assessment for non-chemical vegetation management options. [Proposed Action and Purpose and Need, Purpose and Need for the Proposed Action – 35-05]

There is very little information or studies available in the open scientific and peer-reviewed literature on the ecological and human health consequences of the use of aminopyralid because it is a relatively new pesticide. What little information exists is based almost exclusively on studies submitted to the U.S. EPA by the chemical corporation Dow AgroSciences in support of the registration of aminopyralid. [Environmental Consequences, Herbicide Effects Analysis – 35-06] Non-target plants, particularly dicots (broadleaf plants) are sensitive to the herbicide and will be adversely affected by applications of aminopyralidⁱ. Studies have shown that exposure of non-target plants to aminopyralid causes damage including deformed leaves and stems, as well as reduced fruit production at low concentrationsⁱⁱ. [Environmental Consequences, Vegetation – 35-07] It is quite persistent in soils, with demonstrated half-lives of 32-533 days. Compost and manure contaminated with residues of aminopyralid causes damage to and economic losses of crops on which the compost or manure have been applied. [Environmental Consequences, Social and Economic Values – 35-08] Research also show that aminopyralid altered native plant communitiesⁱⁱⁱ. [Environmental Consequences, Vegetation – 35-09] In a study of the effects of aminopyralid, crops were injured by the herbicide at soil concentrations less than the limit of quantitation (0.2 µg kg⁻¹)^{iv}. [Environmental Consequences, Social and Economic Values – 35-10] Developmental studies involving gavage administration in adult female rabbits documented signs of incoordination upon exposure. In the rabbit study, developmental toxicity was shown by a decrease in fetal body weights. Effects on the nervous system are not well documented. “It seems reasonable to assume the most sensitive effects in wildlife mammalian species will be the same as those in experimental mammals (e.g., changes in the gastrointestinal tract, weight loss, and incoordination).”^v [Environmental Consequences, Wildlife Resources – 35-11] EPA issued a conditional registration for aminopyralid in 2005 and it is not scheduled for review until 2020. It should not be categorized by BLM as a “reduced risk” herbicide because its evaluation is incomplete. [Alternatives, Herbicide Active Ingredients Evaluated Under the Proposed Alternatives – 35-12] To our knowledge, there have not been studies of this herbicide on subsistence resources, including medicinal plants, herbs, berry plants, fish or wildlife, particularly in our traditional use areas. [Environmental Consequences, Paleontological and Cultural Resources – 35-13] It is likely that aminopyralid is more persistent in our colder environment and may cause more damage to northern species and ecosystems. [Environmental Consequences, Soil Resources – 35-14] For the other two herbicides, fluroxypyr and rimsulfuron, we find that there is also insufficient information in the peer-reviewed literature with which to make reasoned assessments concerning the ecological and human health implications of their use. Therefore, we are opposed to their use as a precautionary measure. [Environmental Consequences, Herbicide Effects Analysis – 35-15]

Non-chemical methods exist that are effective and economical. New technologies and products have been developed that provide safe, economical alternatives to the use of herbicides. [Proposed Action and Purpose and Need, Scope of Analysis – 35-16] For example, the provincial government of British Columbia recommends the use of ecological vegetation management rather than the use of herbicides. The government's Integrated Pest Management Program notes that "repeated herbicide applications to keep sites bare, such as around electrical substations, along a fence lines or railroad tracks, will encourage the growth of weeds. The herbicides create a disturbance, both in the vegetation, and, depending on the herbicide, in the soil--which then encourages weed invasion. This disturbance is not limited to the area of application, but may be felt in the vegetation for some distance away...Minimizing herbicide use can reduce weed growth and result in cost effective vegetation management systems."^{vi} Integrated pest management includes cultural methods, mechanical removal, cultivation, mulching, flaming, hot water, controlled burning, or a variety of non toxic herbicides based on corn meal gluten, vinegar, or microbial agents.

Several forms of alternative herbicides have recently come on the market and are currently a very active research subject in Canada. Corn meal gluten applied to mature grass over multiple seasons acts as a pre-emergent herbicide to suppress clover, dandelion and other weed growth by up to 90%. Vinegar (acetic acid) effectively kills many weeds when applied directly to the shoots, and *Cirsium arvense*, the invasive thistle targeted by this permit application, is particularly susceptible according to USDA tests. The Environmental Protection Agency recently approved at least one commercial vinegar-based mixture; a vinegar-based product would be an excellent choice for weed control as vinegar degrades quickly into nontoxic components.^{vii}

Herbicide applications are likely to result in higher economic and ecological costs over the long term, as plants develop resistance to herbicide applications. Despite earlier claims that glyphosate resistance was unlikely, at least 19 weed species have developed glyphosate-resistant strains in agricultural areas worldwide^{viii}. Field studies in Washington state showed that star thistle repeatedly treated with picloram developed resistance to not only the herbicide actually uses, picloram, but to other herbicides (including chlorpyralid) with the same mode of action.^{ix} The use of herbicides will perpetuate resistance of the vegetation to treatment and will not be effective in vegetation management in the future. Herbicide-resistant weeds may also spread into areas beyond the application sites, thereby increasing the problem and cost of weed control. [Environmental Consequences, General – 35-17] We assert that there are new and proven methods and technologies that preclude the need for synthetic herbicides,

including new acetic acid-based products, improved infrared steam technology, cultural and biological control methods. We maintain that an integrated non-chemical approach would be highly effective and preferable to threatening environmental and community health. [\[Proposed Action and Purpose and Need, Scope of Analysis – 35-18\]](#)

On August 1, 2006 the Attorney General of Alaska announced that Alaska “joined with 13 other states and the U.S. Virgin Islands to petition the Environmental Protection Agency (EPA) to require pesticide manufacturers to disclose on the label of their product all hazardous ingredients...The EPA currently requires that pesticide labels disclose only the product’s “active” ingredients that contain toxic materials intended to kill insects, weeds, or other target organisms. Pesticide products also contain many other “inert” ingredients, which are intended to preserve or improve the effectiveness of the pesticides’ active ingredients. These “inert” ingredients may be toxic themselves...” The news release further states that “people who use or who are impacted by the use of a pesticide should have notice of all that product’s potential health risks.” Thus, it would be wrong for BLM to apply herbicides for which the manufacturers do not disclose ingredients that may harm human health. [\[Alternatives, Herbicide Active Ingredients Evaluated Under the Proposed Alternatives – 35-19\]](#)

Dr. Warren Porter, Professor of Environmental Toxicology at the University of Wisconsin, Madison, completed a review of the literature concerning the environmental health effects of low-dose chemical mixtures of pesticides.^x He concluded:

- Pesticides have interactive effects and ultra low-level effects that are below EPA allowable levels. These effects include adverse neurological, endocrine, immune, reproductive and developmental health outcomes. [\[Environmental Consequences, Herbicide Effects Analysis – 35-20\]](#)
- EPA assessments of biological risk can be off by a factor of 10,000 at ultra low doses. Scientists call for a new type of risk assessment in the open literature because of the inadequacies of the current EPA pesticide registration system. [\[Environmental Consequences, Herbicide Effects Analysis – 35-21\]](#)
- Pesticides have broad biological effects that are unintended and often unpredictable because of physicochemical properties engineered into their molecules. [\[Environmental Consequences, Herbicide Effects Analysis – 35-22\]](#)

- Pesticides of different classes can have similar impacts on endocrine disruption and sexual development. Chemicals affect development at levels in the tenths of a part per billion range. [Environmental Consequences, Herbicide Effects Analysis – 35-23]
- In the preeminent peer-reviewed environmental health journal published by the National Institute for Environmental Health Sciences, *Environmental Health Perspectives*,^{xi} the authors warn: “Inert ingredients may be biologically or chemically active and are labeled inert only because of their function in the formulated product...Inert ingredients can increase the ability of pesticide formulations to affect significant toxicological endpoints, including developmental neurotoxicity, genotoxicity, and disruption of hormone function. They can also increase exposure by increasing dermal absorption, decreasing the efficacy of protective clothing, and increasing environmental mobility and persistence. Inert ingredients can increase the phytotoxicity of pesticide formulations, as well as toxicity to fish, amphibians, and microorganisms.” In the case of this permit application, the active ingredients cannot be used without an adjuvant and/or surfactant. The scientific literature supports the fact that the use of surfactants/adjuvants increases the bioavailability, toxicity, persistence, and bioaccumulation of the active ingredient. [Environmental Consequences, Herbicide Effects Analysis – 35-24]

We firmly oppose the use of these and other herbicides because of the hazards posed to ecological and human health; and given that BLM has failed to properly conduct an alternatives assessment. [Alternatives, Description of the Alternatives – 35-25] Alaskans are particularly vulnerable to the effects of these chemicals due our reliance on medicinal plants and traditional foods. [Environmental Consequences, Paleontological and Cultural Resources – 35-26]

Submitted by Pamela Miller, Biologist and Executive Director, Alaska Community Action on Toxics

ⁱ Human Health and Ecological Risk Assessment Final Report for Aminopyralid. 2007. Prepared for the USDA/Forest Service and National Park Service. SERA TR-052-04-04a.

ⁱⁱ Aminopyralid, Chemical Watch Fact Sheet. Beyond Pesticides, 2011.

ⁱⁱⁱ Almquist TL and RG Lym. 2010. Effect of aminopyralid on Canada thistle and the native plant community in a restored tallgrass prairie. *Invasive Plant Science and Management* 3(2):155-168.

^{iv} Fast BJ et al. 2011. Aminopyralid soil residues affect rotational vegetable crops in Florida. *Pest Management Science* 67(7):825-830.

^v Human Health and Ecological Risk Assessment Final Report for Aminopyralid. 2007. Prepared for the USDA/Forest Service and National Park Service. SERA TR-052-04-04a.

^{vi} Provincial Government of British Columbia Integrated Pest Management Programme—B.C. Pest Monitor Newsletter: http://www.env.gov.bc.ca/epd/ipmp/publications/pest_monitor/vol5_1.htm. Accessed September 14, 2009.

^{vii} Quarles, W. 2010. Alternative herbicides in turfgrass and organic agriculture. *The IPM Practitioner: Monitoring the Field of Pest Management*. 22(5/6) May/June 2010.

^{viii} A. J. Price, K. S. (2011). Glyphosate-resistant Palmer amaranth: A threat to conservation tillage. *Journal of Soil and Water Conservation*, 66 (4), 265-275.

^x Provincial Government of British Columbia Integrated Pest Management Programme—B.C. Pest Monitor Newsletter: http://www.env.gov.bc.ca/epd/ipmp/publications/pest_monitor/vol5_1.htm. Accessed September 14, 2009.

^{ix} Sabba, R.P. et al. 2003. Inheritance of Resistance to Clopyralid and Picloram in Yellow Starthistle (*Centaurea solstitialis* L.) Is Controlled by a Single Nuclear Recessive Gene. *Journal of Heredity*. 94(6):523–527

^x Porter, W. 2005. Report as an expert witness.

^{xi} Cox, C. and M. Sorgan. 2006. Unidentified inert ingredients in pesticides: implications for human and environmental health. Environmental Health Perspectives
www.ehponline.org/docs/2006/9374/abstract.pdf

DOCUMENT #36

Bureau of Land Management

To Whom It May Concern:

The Bureau of Land Management (BLM) is requesting public input on a proposal to add three new herbicides for invasive species management on federal land in 17 western states.

The BLM currently uses 18 different herbicide active ingredients, and would like to add aminopyralid, fluoxypyr, and rimsulfuron to the list of approved herbicides.

A close look at this proposal **demonstrates that it is not a good idea and in fact is terrible – the assault on the pollinators for the sake of weeds is no longer acceptable on any level.**

The ecosystems to which the herbicides will be applied as well as for the public it is imperative that you clean up and stop spraying toxins in the environment.

Managing invasive species with herbicides is a not a solution as it add to ecological decline, and continuing the 'pesticide treadmill' by adding more and different herbicides to its list of land management strategies, the BLM has the opportunity to implement more **regenerative land management practices.**

There are three major concerns with the BLM's proposal:

- 1) The herbicides the BLM wants to add are toxic;**
- 2) Adding these three herbicides will primarily benefit private interests that lease or use public land for their own economic gain; and,**
- 3) It's time to change the paradigm of invasion biology that views invasive species as threats to ecosystems.**

Now, let's address each of these in a little more detail. 1) The herbicides the BLM wants to add are toxic. Forty million people live within 25 miles of BLM-managed land in the 17 states where the new herbicides will be applied if the agency adopts the 'preferred alternative.' In 2011, 57.8 million people visited BLM land for recreational purposes. Though the risk assessment performed as part of the Environmental Impact Statement (EIS) found low risk of human exposure, each of these new herbicides present toxicity concerns for humans and other creatures. Aminopyralid remains stable even after passing through an animal's digestive system. Deer, elk, 36-01
or cows that graze where Aminopyralid has been sprayed will carry the still-active herbicide far 36-02
and wide through their manure. Aminopyralid also has a high potential for surface water runoff 36-03
because of its chemical structure. Fluoxypyr is toxic to freshwater fish and aquatic invertebrates.

See similar Document #26 for subject headings for individual comments -

Rimsulfuron is an acetolactate synthase-inhibitor, a type of herbicide that kills plants by interfering with amino acid and DNA synthesis. Recent research demonstrates that animals and people have very similar mechanisms of amino acid synthesis, and may be affected by acetolactate synthase-inhibiting herbicides. And, although the BLM is requesting the addition of three new herbicide active ingredients, the herbicide formulations they purchase and use could contain a number of active ingredients (such as PastureGard that contains fluoxypyr and triclopyr). These herbicide formulations are not subject to toxicity testing that, and their potential synergistic effects are unknown. In addition, most herbicide formulations contain undisclosed, untested, and unregulated surfactants and adjuvants that are not subject to regulatory scrutiny, making it impossible to know the full effects of applying these chemicals on public land. 2) Adding these three herbicides will primarily benefit private interests that lease or use public land for their own economic gain. The herbicides the BLM wants to add will be used primarily for improving the forage value of rangelands. BLM land managers plan to use aminopyralid to control thistle species, fluoxypyr for prickly pear and kochia, and rimsulfuron on annual grasses like cheat grass. These particular plants are considered invasive in rangelands because they decrease the amount of forage available for cattle and sheep. However, the BLM doesn't own cattle or sheep, it leases land to people who do. By adding these three herbicides, the BLM will use public money to maintain the viability of private ranching interests. In addition to managing land for the direct benefit of grazing interests, the BLM also maintains rights of way for power lines, oil and gas pipelines, and roads for extraction of natural gas, oil, timber, and minerals. The BLM maintains over 106,000 rights of way that help keep the resource extractive industries in business. Maintaining rights of way with herbicide represents yet another example of public funds being used for private gain at the expense of ecological integrity. 3) It's time to change the paradigm of invasion biology that views invasive species as threats to ecosystems. The apparent threats that invasive species pose to ecosystems need to be placed in context of the ecological dynamics where they are found. Invasive species provide an ecological snapshot of above and below ground processes playing out in real time. If kochia, prickly pear, Russian thistle, and cheat grass are growing and spreading in western states, then it would be prudent to consider why they are thriving. Plants don't have malevolent intent or characteristics – they are making use of available niches. If we treat invasive species as ecological indicators rather than problems, then it is possible to advance land management practices that make it less likely that invasive species will thrive. Unfortunately, a 'no use of herbicides' alternative is not being considered as an option in the current process.

Unfortunately, this decision means that the BLM is missing out on adopting land management strategies that lead to more diverse and productive ecosystems that are less prone to invasion. Unmanaged or poorly managed open range grazing is one of the main contributors to the proliferation of invasive species in western rangelands. An ecologically based, long-term solution to invasive species management would change the way grazing is practiced on public lands.

The BLM should lease land to graziers that practice holistic, planned grazing rather than open range grazing. Ranchers who practice holistic grazing find that their weed 'problems' disappear as their soil improves, which also increases water holding capacity, stores carbon in the soil, improves diversity and abundance of forage plant species, leading to increased animal health, and eventually higher economic returns. Another option would be to reinstate traditional indigenous land management practices like low-intensity burning to encourage populations of non-domesticated grazing animals like deer, elk, antelope, buffalo, as well as top predators like wolves and cougars. Such practices would advance the 'triple bottom line' of social, ecological, and economic well-being and would allow BLM to manage western rangelands in ways that make them highly diverse, productive, and regenerative, rather than continuing those practices that contribute to their decline.

36-11 -

It is imperative that we get off this chemical treadmill for the sake and safety of our planet and Americans.

Sincerely



Michelle Schumacher

18 Paseo Canos

San Clemente Ca 92673

949.280.4276

Skip Canfield

From: Julie Ernstein
Sent: Wednesday, July 29, 2015 3:06 PM
To: Skip Canfield
Subject: RE: Nevada State Clearinghouse Notice E2015-177 (DPEIS - Use of Herbicides on Public Lands)

Dear Skip,

I have read the Department of the Interior - Bureau of Land Management's Notice of Availability of the Draft Programmatic Environmental Impact Statement to Evaluate the Use of Herbicides on Public Lands Administered by the Bureau of Land Management with interest. The Draft Programmatic EIS, titled *Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States (DOI-BLM-WO-WO2100-2012-0002-EIS)* evaluates the use of three new herbicides as part of the BLM's vegetation treatment programs in 17 Western States. Thank you for the opportunity to review this important document. It raises no cultural resource/historic preservation concerns for the Nevada State Historic Preservation Office (SHPO).

Should you have any questions regarding these comments, please do not hesitate to contact me directly.

Best,

Julie

Julie H. Ernstein, Ph.D., RPA
 Deputy SHPO
 State Historic Preservation Office
 901 S. Stewart St., Suite 5004
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From: scanfield@lands.nv.gov [mailto:scanfield@lands.nv.gov]
Sent: Monday, June 22, 2015 10:05 AM
To: Alan Jenne; clytle@lincolnnv.com; Brad Hardenbrook; James Morefield; cohn1@nv.doe.gov; Lowell Price; Mark Freese; Sandy Quilici; Tod.oppenborn@nellis.af.mil; zip.upham@navy.mil; Dave Marlow; Shimi.Mathew@nellis.af.mil; craig.mortimore@wildnevada.org; njboland.nev@gmail.com; Jennifer Crandell; 99abw.ccy@nellis.af.mil; whenderson@nvleague.org; dstapleton@nvnao.org; ddavis@unr.edu; munteanj@unr.edu; jprice@unr.edu; Rebecca Palmer; Mark Harris; ed.rybold@navy.mil; Sherry Rupert; dmouat@dri.edu; Alisanne Maffei; Bette Hartnett; mison@dot.state.nv.us; Warren Turkett; Michael Visher; Jim R. Balderson; Lindsey Lesmeister; Steve Foree; Mark Enders; John C. Tull; John Christopherson; Richard M. Perry; Kevin J. Hill; endacottsteve@charter.net; jered.mcdonald@lcb.state.nv.us; Moira Kolada; rwarnold@hotmail.com; lkryder@co.nye.nv.us; Julie Ernstein; cv.ecchio@travelnevada.com; bob@intermountainrange.com; CAnderson@washoecounty.us; JEnglish@washoecounty.us; tmueller@dot.state.nv.us; Valerie King; Adele M. Basham; Skip Canfield; jolson@landercountynv.org; Tina Mudd; Kacey KC; janehfreeman@fs.fed.us; JSouba@ci.fallon.nv.us; robert.turner.3@us.af.mil; Robert.rule@navy.mil; Alysa.Keller@lcb.state.nv.us; Cayenne Engel; larry.m.cruz.civ@mail.mil; Elizabeth A. Kingsland; charles.r.king104.civ@mail.mil; Matt Maples; Richard Martin; Elyse Randles; Tracy Kipke; Jennifer Newmark; Edmund Quaglieri; Kristin Szabo; douglas.m.mceldowney.mil@mail.mil; Paul.Ryan@nv.usda.gov; Shirley DeCrona; Tim Rubald; Ian Kono; rharvey@forestry.nv.gov; Linebah@charter.net; michelle.langsdorf@nv.nacdnet.net; djohnston@dps.state.nv.us; bthompson@dot.state.nv.us; Richard Ewell; alisah@unr.edu; Michael "Bert" Bedeau; Karen Beckley; Cynthia

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Terry Rubald; Traci Pearl; chetelat@snhdmail.org; Adam Roney; brenda@cwsd.org

Subject: Nevada State Clearinghouse Notice E2015-177 (DPEIS - Use of Herbicides on Public Lands)



NEVADA STATE CLEARINGHOUSE

Department of Conservation and Natural Resources, Division of State Lands
901 S. Stewart St., Ste. 5003, Carson City, Nevada 89701-5246
(775) 684-2723 Fax (775) 684-2721

TRANSMISSION DATE: 06/22/2015

U.S. Bureau of Land Management

Nevada State Clearinghouse Notice E2015-177

Project: DPEIS - Use of Herbicides on Public Lands

Follow the link below to find information concerning the above-mentioned project for your review and comment.

E2015-177 - <https://www.federalregister.gov/articles/2015/06/19/2015-15118/notice-of-availability-of-the-draft-programmatic-environmental-impact-statement-to-evaluate-the-use>

- **Please evaluate this project's effects on your agency's plans and programs and any other issues that you are aware of that might be pertinent to applicable laws and regulations.**
- **Please reply directly from this e-mail and attach your comments.**
- **Please submit your comments no later than Monday August 3rd, 2015.**
-

Clearinghouse project archive

Questions? Skip Canfield, Program Manager, (775) 684-2723 or
nevadaclearinghouse@lands.nv.gov

____ No comment on this project ____ Proposal supported as written

AGENCY COMMENTS:

Signature:

Date:

Requested By:

Distribution:

- 99ABW Nellis
- Division of Emergency Management
- Intermountain Range
- Adam Roney - Public Utilities Commission
- Adele M. Basham - NDEP
- Alan Jenne - Department of Wildlife, Elko
- Alisa Huckle - UNR Library
- Alisanne Maffei - Department of Administration
- Alysa Keller - Legislative Counsel Bureau
- Bert Bedeau - Comstock Historic District Commission
- Bette Hartnett - State Energy Office
- Bill Thompson - Department of Transportation, Aviation
- Bob Roper - Nevada Division of Forestry
- Bob Turner - Nellis AFB
- Brenda Hunt - CWSD
- Cayenne Engel - Nevada Division of Forestry
- Chris Anderson - Washoe County Health Department
- Chuck King - Hawthorne Army Depot
- Claudia Vecchio - Nevada Commission on Tourism
- Cory Lytle - Lincoln County
- Craig Mortimore - Wild Nevada
- Cynthia Turiczek - Public Utilities Commission
- D. Bradford Hardenbrook - Department of Wildlife, Las Vegas
- Dagny Stapleton - NACO
- Dave Marlow -
- David David - UNR Bureau of Mines
- David Mouat - Desert Research Institute
- Deborah Stockdale - Nellis Air Force Base
- Denesa Johnston - Fire Marshal
- Ed Ryan - Smith and Mason Valleys Conservation District
- Ed Rybold - NAS Fallon
- Eddy Quaglieri - Division of Water Resources
- Elizabeth A. Harrison - Tahoe Resource Team - Division of State Lands
- Eloisa Hopper - Nellis Air Force Base
- Elyse Randles - State Land Office
- Ian Kono - Nevada Division of Water Resources
- J Crandell - Colorado River Commission of Nevada

James D. Morefield - Natural Heritage Program
James Llinebaugh - Grazing Board District N-3
Jane Freeman - US Forest Service
Jeff Hardcastle - State Demographer
Jennifer Newmark - NDOW - Wildlife Diversity
Jered McDonald - Legislative Counsel Bureau
Jim Balderson - NDEP
Jim Baumann - Nevada State Grazing Boards - Central Committee
Jim English - Washoe County
Jim Olson - Lander County
Jim Souba - City of Fallon Public Works
John Christopherson - Nevada Division of Forestry
John Delong - Nevada State Grazing Boards - Central Committee
John Estill - Nevada State Grazing Boards - Central Committee
John Muntean - UNR Bureau of Mines
John Tull - NDOW
Jon Price - UNR Bureau of Mines
Julie Ernstein - State Historic Preservation Office
Julie Hunter - Washoe County Health District
Kacey KC - Sagebrush Ecosystem Technical Team
Karen Beckley - State Health Division
Kevin Hill - Nevada State Energy Office
Kristin Szabo - Nevada Natural Heritage Program
Larry Cruz - Hawthorne Army Depot
Levi Kryder - Nye County
Linda Cohn - National Nuclear Security Administration
Lindsey Lesmeister - NDOW
Lowell Price - Commission on Minerals
Lynn Haarklau - Nellis Air Force Base
Major Doug McEldowney - Nevada National Guard
Mark Enders - NDOW
Mark Freese - Department of Wildlife
Mark Harris, PE - Public Utilities Commission
Marta Adams - Attorney General
Matt Maples - NDOW
Michael J. Stewart - Legislative Counsel Bureau
Michael Visher - Division of Minerals
Michelle Langsdorf - Grazing Board District N-3
Mitch Ison - NDOT
Moir Kolada - NDOW
Nancy Boland - Esmeralda County
Rachel Buzetti - Nevada State Grazing Boards - Central Committee
Rebecca Palmer - State Historic Preservation Office
Rich Harvey - Division of Forestry
Rich Perry - Nevada Division of Minerals
Richard Arnold - Nevada Indian Commission
Richard Huntsberger - Nevada State Grazing Boards - Central Committee
Rick Martin - Division of Emergency Management
Robert Rule - NAS Fallon
Rory Chetelat - Clark County
Ryan McGinness - Washington Office
Sandy Quilici - Department of Conservation & Natural Resources
Sherry Rupert - Indian Commission
Shimi Mathew - Nellis AFB
Shirley DeCrona - Nevada Division of State Parks
Skip Canfield - State Land Use Planning Agency
Stephen Foree - NDOW
Steve Boies - Nevada State Grazing Boards - Central Committee

Steve Endacott - City of Fallon
Susan Scholley - Legislative Counsel Bureau
Terry Rubald - Nevada Department of Taxation, Local Government, Centrally Assessed Property
Tim Rubald - Conservation Districts
Timothy Mueller - Department of Transportation
Tina Mudd - Dept of Agriculture
Tod Oppenborn - Nellis Air Force Base
Traci Pearl - Office of Traffic Safety
Tracy Kipke - NDOW
Valerie King - NDEP
Warren Turkett - Colorado River Commission of Nevada
Wayne Howle - Attorney General
Wes Henderson - Nevada League of Cities
Zip Upham - NAS Fallon

WYOMING WEED AND PEST COUNCIL (WWPC)

GOVERNOR, **Matt Mead**

PRESIDENT, John Watson

6607 Campstool Road - Cheyenne, WY 82002-0100 - (307) 777-6585 or 1195 South Guernsey Road – Wheatland, WY 82201

07/30/15

Ms. Gina Ramos
PEIS Project Manager
Bureau of Land Management
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Washington, DC 20240
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Blm_wo_vegeis@blm.gov

DOCUMENT #38

Ms. Ramos

The Wyoming Weed and Pest Council, which is comprised of twenty-three Weed and Pest Control Districts in the State of Wyoming and having a membership of over 240 District Supervisors, District employees and Board members, respectfully submit our comments concerning the Draft Programmatic Environmental Impact State titled Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States (DOI-BLM-WO-WO2100-2012-0002-EIS). The Bureau of Land Management (BLM) administers over 18 million acres of federal land in the State of Wyoming, and through collaborative efforts with the regional and state BLM offices, the Wyoming Weed and Pest Control Districts have played a significant role in assisting the federal government in managing these lands for noxious and invasive plants.

As mentioned in the Draft EIS (3-17), the estimated rate of weed spread on public lands is 4,300 acres per day (USDOI LM 2012c) and an estimate of weed spread on all western federal lands is 10 to 15 percent annually (Asher and Dewey 2005). Many of the invasive species responsible for this spread are difficult to control and their spread is counterproductive to the efforts of the BLM to promote healthy ecosystems. Difficulties in managing these various invasive species can, in part, be related back to the limited availability of effective management tools, mainly herbicides.

Therefore, the Wyoming Weed and Pest Council supports the BLM's actions in implementing a risk assessment for the inclusion of aminopyralid, fluroxypyr and rimsulfuron on the approved list of herbicides for use on BLM managed lands. The Council also believes aerial application of these products will provide a cost-effective alternative to treatments in areas where the use of ground equipment is unfeasible. Thus the Council recommends and supports the BLM pursuing approval of Alternative B – Allow for the Use of Three New Herbicides in 17 Western States.

We believe the Draft EIS does an effective job of defending the inclusion of these new active ingredients and we look forward to working with regional offices in implementing management programs utilizing these new tools. We also support the BLM pursuing additional risk assessments that may provide land managers additional options for effective control.

Sincerely,



John Watson

President

Wyoming Weed and Pest Council

Executive Directors

Slade Franklin
State Coordinator, Cheyenne

Walt Hartung
Area 1, Cody

Gail Mahnke
Area 3, Lusk

Randy Laughter
Area 5, Green River

Josh Shorb
Secretary, Powell

Quade Schmelzle
Area 2, Gillette

Adrian Hunolt
Area 4, Daniel

Lindsay Wheat, Treasurer
Area 6, Laramie



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

DOCUMENT #39 -

AUG 10 2015

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Ms. Gina Ramos
Bureau of Land Management
1849 C Street NW, Rm 2134 LM, WO-220
Washington, D.C. 20240

Dear Ms. Ramos,

In accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act, the Environmental Protection Agency (EPA) has reviewed the Bureau of Land Management's (BLM) Draft Programmatic Environmental Impact Statement (Draft PEIS) on Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in the 17 Western States.

The BLM is proposing to add the herbicides aminopyralid, fluroxypyr, and rimsulfuron to its list of approved active ingredients for use on public lands under its administration in 17 Western States. These herbicides have been selected based on their effectiveness at controlling invasive plant species and their suitability for the BLM's treatment needs. The new herbicides would be integrated into the herbicide treatment activities that were assessed in the *Vegetation Treatments Using Herbicides on Bureau of Land Management Land in 17 Western States Programmatic Environmental Impact Statement* (2007 PEIS). We appreciate BLM's commitment in the draft PEIS to conduct site-specific NEPA analysis prior to initiating project-specific treatments to ensure that site-specific impacts and mitigation are considered.

The draft PEIS analyzes four alternatives, including the no action alternative, to improve the effectiveness of the BLM's vegetation management program and increase flexibility and options when designing on-the-ground herbicide treatments for up to 932,000 acres in 17 Western States. The three action alternatives include: 1) the Preferred Alternative which provides for aerial and ground application of the three proposed active ingredients, 2) only ground-based application of the three proposed active ingredients, and 3) an alternative that restricts the use to only non-acetolactate synthase-inhibiting active ingredients (No Rimsulfuron).

Based on our review of the draft PEIS, we offer the following comments:

Relevant Updates since the 2007 PEIS

In May 2015, the Pollinator Health Task Force issued a *National Strategy to Promote the Health of Honey Bees and Other Pollinators*¹ which tasked federal agencies with helping to improve

¹ The National Strategy to Promote the Health of Honey Bees and Other Pollinators is available at:
<https://www.whitehouse.gov/sites/default/files/microsites/ostp/Pollinator%20Health%20Strategy%202015.pdf>

pollinator health. In the strategy, BLM is tasked with including pollinator friendly plants in land management programs and identifying plant species that are most beneficial to pollinators to consider in regional development programs. In addition, the U.S Forest Service and BLM issued a joint document highlighting pollinator-friendly best management practices for Federal Lands which guides federal land managers to effectively and efficiently use available resources and engage public and private partnerships in taking action for the conservation and management of pollinators and pollinator habitat on federal lands. The final PEIS should briefly discuss these new resources and describe how activities involving the use of herbicides for vegetation management, including the addition of these three herbicides, may impact implementation of these best practices and the national strategy. [Proposed Action and Purpose and Need, Relationship to Statutes, Regulations, and Policies - 39-01]

As a result of a U.S. Sixth Circuit Court of Appeals decision in *National Cotton Council, et al. v. EPA*, as of October 31, 2011, point source discharges of biological pesticides, and chemical pesticides that leave a residue, into waters of the U.S. are required to comply with National Pollution Discharge Elimination System (NPDES) requirements. Therefore, NPDES permits are required for pesticide applications directly to, over, or near water and may be required for certain instances on public lands. The final PEIS should include a discussion of the new permitting requirements and outline a framework for obtaining a NPDES permit for project-specific treatments to ensure that site-specific impacts and mitigation are considered.

[Environmental Consequences, Water Resources and Quality - 39-02]

Water Resources

[EPA is concerned about unintended consequences that may result from applications of herbicides such as drift, effects on non-target species, accidental spills, and persistence in soils that may erode into waterways; especially in designated habitat conservation areas. For example, application of the three proposed herbicides near streams within Riparian Habitat Conservation Areas (RHCA) should follow requirements of the Pacific Anadromous Fish/Inland Native Fish (PACFISH/INFISH) management strategies that limit ground-disturbing activities within RHCA. Additionally, BLM should adhere to prescribed buffers i.e., 300 ft. on all fish-bearing streams and 150 ft. on streams without fish for improved protection of aquatic resources in RHCAs from herbicide application projects.] [The final PEIS should clarify plans for treatment of invasive plants within buffer zones and anticipate measures to take to protect water quality within nearby waterways; including specific mitigation measures for wetlands and riparian areas to offset potential impacts associated with the three proposed herbicides.] [Environmental Consequences, Water Resources and Quality - 39-04]

[In areas where there are soils with high infiltration rates, herbicides that are highly soluble in water have the potential to leach into such soils and contaminate surface and groundwater, potentially causing exceedances of water quality and/or drinking water standards. In addition, no water quality standards exist for herbicides such as the proposed aminopyralid, which has the highest mobility, with some modeling data suggesting that leaching can occur to 60 inches or greater in all soil types in average rainfall/cool climates and a higher likelihood of reaching groundwater than all other herbicides. Therefore, EPA recommends that future site-specific NEPA analyses include risk assessment data for adjuvants proposed for use with the three proposed herbicides on BLM land.][Additionally, BLM should consider excluding application of herbicides near waterbodies with no water quality data and designated source water protection areas.] [Environmental Consequences, Water Resources and Quality -39-06] -

[Alternatives, Herbicide Treatment Standard Operating Procedures - 39-07]

[Environmental Consequences, Water Resources and Quality - 39-08]

[Many invasive plants on public lands are associated with roads, trails, paths, and other areas where the soil has been disturbed and/or compacted resulting in enhanced runoff and unanticipated significant impacts. Therefore, the final PEIS should highlight a process to assess those areas when site specific actions will be taken.] [Extensive chemical treatment activities have the potential to increase erosion and sediment delivery to drainages from the creation of barren ground from invasive plant removal. Applied herbicides could also be discharged to aquatic habitats via surface runoff, wind drift, leaching, or accidental spills. Cumulatively, water quality could also be impacted as a result of effects from other projects on BLM lands, including, but not limited to, road and trail construction and maintenance activities, livestock grazing along drainages, and recreational activities adjacent to drainages. Treatments near 303(d) listed waters or road ditches that drain into waterways could further degrade water quality due primarily to sediment, herbicide, and temperature loadings (vegetation removal). The final PEIS, therefore, should identify added precautions that will be used when applying the herbicides near streams or road ditches that drain into streams to minimize or avoid drift impacts and sublethal effects to aquatic life.] [Additionally, EPA recommends that BLM commit to using EPA certified Drift Reduction Technology as it becomes available².]

[Alternatives, Herbicide Treatments Standard Operating Procedures - 39-09]

Treatment Screening and Assessment Process

[The draft PEIS outlines the process the BLM considers to determine the suitability of the herbicide at that location; including herbicide and target site characteristics. As a part of the site-suitability process, EPA recommends that BLM contact the USDA Natural Resources Conservation Service to determine whether the application sites are highly erodible or the soil is prone to wind erosion (light, sandy soils).] [In addition, BLM should consult with each state lead agency responsible for pesticide regulations prior to use where soils are susceptible to wind erosion or there are sensitive crops grown in the area in order to minimize unintended impacts.]

[Proposed Action and Purpose and Need, Interrelationships and Coordination - 39-11]

Aminopyralid has been known to be persistent in composted materials. Therefore, EPA recommends that the final PEIS commit to ensure that following the application of Aminopyralid to an area, BLM should conduct site assessment and ensure that plant materials are not removed and introduced into any composting activities. [Alternatives, Mitigation - 39-12]

Air Quality

The draft PEIS utilized the air quality analysis completed for the 2007 PEIS since the proposed action does not increase the total amount of herbicide application. However, during the review of the 2007 PEIS, EPA identified several issues with the air quality emissions inventory and modeling. These issues may lead to an underestimate of cumulative impacts to air quality due to lack of consideration of other management activities that will be conducted under the land management plan that potentially have impacts to air quality. Therefore, concerns regarding cumulative impacts to air quality still remain. [Environmental Consequences, Cumulative Effects Analysis - 39-13]

Vegetation and Wildlife

Application of herbicides such as aminopyralid, have the potential to damage a variety of vegetation communities, including macrophytic species (wetland vegetation), grasslands, and forbs, resulting in reduced growth, curling, chlorosis and/or necrosis and plant death. In particular, use of aerial applications may harm non-target forage and cover species more than

² <http://www2.epa.gov/reducing-pesticide-drift/about-drift-reduction-technology-program>

other methods. It is also possible that the number of acres treated annually may increase in years in which herbicides are applied aerially, which would increase the adverse effects of herbicide application to non-target vegetation in those areas. [Environmental Consequences, Vegetation - 39-14] -

Herbicide treatments could also impact wildlife and livestock due primarily to direct spray, accidental spills, drift, and ingestion of contaminated vegetation, prey species, or water. Effects to animals could include death, damage to vital organs, decrease in growth, decrease in reproductive output and condition of offspring, and increased susceptibility to predation. Wildlife in particular could experience disruption of dispersal and foraging, which could expose some species to greater predation related to habitat and cover losses. Overall, terrestrial and aquatic applications of herbicides are likely to alter vegetation and have secondary indirect effects on animals, including food availability and habitat quality. [Environmental Consequences, Wildlife Resources - 39-15]

While we appreciate the ecological risk assessment data provided in the draft PEIS, we recommend the risk assessment include evaluation of risks from incidents that applicants are required to report for each herbicide proposed for use e.g., wind erosion, and tailor the evaluation to local conditions so accurate risks may be known. Additionally, it may be appropriate to include a broader search of the ecotoxicity data for these chemicals by also providing data from the open literature via ECOTOX³. [Supplemental Reports - Ecological Risk Assessment - 39-16 and 39-17]

Wetlands

Non-target wetland and riparian areas could be exposed to herbicides transported from upland areas via a variety of methods. The primary potential impacts would be loss of non-target native vegetation and contamination of water or soil, particularly as a result of an accidental spill. Therefore, we recommend the final PEIS emphasize the importance of using all herbicides, especially near waters and wetlands, consistent with the limitations and instructions included on herbicide labels. Using herbicides near waters is subject to NPDES permitting, which requires compliance with herbicide labels to avoid impacts to aquatic resources.

[Environmental Consequences, Wetland and Riparian Areas -39-18]

GHG and Climate Change

We appreciate the discussion of climate change and the inclusion of GHG emissions associated with the proposed action and alternatives. While the draft PEIS acknowledges the 2010 Council on Environmental Quality (CEQ) draft guidance on analyzing climate change impacts in NEPA, we believe the most recent CEQ Revised Draft Guidance for Federal Agencies' Consideration of GHG Emissions and Climate Change (2014) provides a reasonable approach for conducting analyses of GHGs and climate change impacts. We note that the draft PEIS compares the GHG emissions to the 17 states and national emissions; we believe this approach does not provide meaningful information for a programmatic-level analysis. We recommend that the NEPA analyses provide a frame of reference, such as an applicable Federal, state, tribal or local goal for GHG emission reductions, and discuss whether the emissions levels are consistent with such goals. Environmental Consequences, Air Quality - 39-19]

While the Chapter 3 Greenhouse Gas Emissions and Climate Change section notes that "regulatory agencies recognize that GHG emissions from a particular project cannot be tied specifically to climate change impacts," we recommend agencies follow the approach

³ <http://efp.epa.gov/ecotox/>

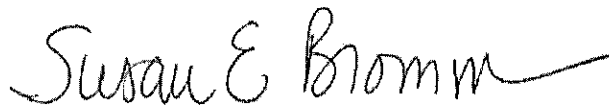
recommended in the CEQ guidance of using the projected GHG emissions as proxy for assessing a proposed action's potential climate change impacts. This allows an agency to present the environmental impacts in clear terms and with sufficient information to make a reasoned choice between the no-action and alternatives and mitigation.

[Affected Environment, Air Quality and Climate - 39-20]

Lastly, the draft PEIS states that no mitigation measures would be necessary for potential air quality and climate change impacts. We recommend that the final PEIS identify and commit to implementation of reasonable mitigation measures to include at the project level to specifically reduce GHG emissions such as using energy efficient equipment and limiting idling when possible. [Environmental Consequences, Air Quality - 39-21]

Based on our review of the PEIS, we have rated the proposed action an EC-2 (Environmental Concerns – Insufficient Information). A copy of EPA's rating criteria is enclosed. If we can provide further explanation of our comments, I can be reached at 202-564-5400, or you can contact Jessica Trice of my staff at 202-564-6646.

Sincerely,

A handwritten signature in black ink that reads "Susan E Bromm" with a long, sweeping horizontal line extending to the right.

Susan E. Bromm
Director
Office of Federal Activities

Environmental Impact Statement Rating System Criteria

EPA has developed a set of criteria for rating a draft Environmental Impact Statement (EIS). EPA rates the draft EIS on an alpha-numeric system and includes the designated rating in EPA's comment letter. In general, the rating is based on the lead agency's preferred alternative. The rating system provides a basis upon which EPA makes recommendations to the lead agency for improving the draft EIS.

The alphabetical categories listed below signify EPA's evaluation of the environmental impacts of the proposal:

- LO (Lack of Objections)
- EC (Environmental Concerns)
- EO (Environmental Objections)
- EU (Environmentally Unsatisfactory)

The numerical categories listed below signify an evaluation of the adequacy of the draft EIS:

- 1 (Adequate)
- 2 (Insufficient Information)
- 3 (Inadequate)

The rating of the draft EIS consists of one of the category combinations shown below:

- LO
- EC-1, EC-2
- EO-1, EO-2, EO-3
- EU-1, EU-2, EU-3, or 3

Rating the Environmental Impact of the Action

LO (Lack of Objections)

The review has not identified any potential environmental impacts requiring substantive changes to the preferred alternative. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposed action.

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EC (Environmental Concerns)

The review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact.

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EO (Environmental Objections)

The review has identified significant environmental impacts that should be avoided in order to adequately protect the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). The basis for environmental Objections can include situations:

- Where an action might violate or be inconsistent with achievement or maintenance of a national environmental standard;
- Where the federal agency violates its own substantive environmental requirements that relate to EPA's areas of jurisdiction or expertise;
- Where there is a violation of an EPA policy declaration;
- Where there are no applicable standards or where applicable standards will not be violated but there is potential for significant environmental degradation that could be corrected by project modification or other feasible alternatives; or
- Where proceeding with the proposed action would set a precedent for future actions that collectively could result in significant environmental impacts.

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EU (Environmentally Unsatisfactory)

The review has identified adverse environmental impacts that are of sufficient magnitude that EPA believes the proposed action must not proceed as proposed. The basis for an environmentally unsatisfactory determination consists of identification of environmentally objectionable impacts as defined above and one or more of the following conditions:

- The potential violation of, or inconsistency with, a national environmental standard is substantive and/or will occur on a long-term basis;
- There are no applicable standards but the severity, duration, or geographical scope of the impacts associated with the proposed action warrant special attention; or
- The potential environmental impacts resulting from the proposed action are of national importance because of the threat to national environmental resources or to environmental policies.

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Rating the Adequacy of the Draft Environmental Impact Statement (EIS)

Category 1 - Adequate

The draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

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Category 2 - Insufficient Information

The draft EIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the proposal. The identified additional information, data, analyses, or discussion should be included in the final EIS.

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Category 3 - Inadequate

The draft EIS does not adequately assess the potentially significant environmental impacts of the proposal, or the reviewer has identified new, reasonably available, alternatives, that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. The identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. This rating indicates EPA's belief that the draft EIS does not meet the purposes of NEPA and/or the Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS.

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[Contact Us](#) to ask a question, provide feedback, or report a problem.



OFFICE OF
ADAMS COUNTY WEED CONTROL
P.O. BOX 358
COUNCIL, IDAHO 83612



David Herold
Superintendent

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Cell Phone: 208-566-1271
weeds@co.adams.id.us

July 20, 2015

DOCUMENT #40 -

Ms. Gina Ramos
PEIS Project Manager
Bureau of Land Management
1849 C Street, NW Rm 2134 LM, WO-220
Washington, DC 20240
(206) 623-3793-FAX
Email: blm_wo_vegeis@blm.gov

Dear Ms. Ramos,

This letter is in response to the BLM's *Draft Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS)*.

Our county weed control agency works closely with the BLM to coordinate weed control activities on BLM, private and public agency grounds within our county. It has been my experience that the aminopyralid chemistry in particular is very beneficial in the control of broadleaf invasive weeds in our area, and I believe it would be a great benefit to the restoration of native flora on BLM lands as well.

Used according to label directions as part of an integrated management program, these herbicides are safe and effective. While no course of action is without risk, it is certain that "no action" will result in further degradation of our natural resources. I urge the BLM to approve the use of Aminopyralid, Fluroxypyr and Rimsulfuron for noxious weed control in the 17 Western States.

Respectfully,

David J. Herold
Superintendent, Adams County Weed Control

DATE: June 29, 2015

DOCUMENT #41

TO: Nevada State Clearinghouse, DCNR

FROM: Nevada Division of Environmental Protection, Bureau of Water Pollution Control

SUBJECT: State Clearinghouse Comments for E2015-177 (DPEIS - Use of Herbicides on Public Lands)

Disclaimer: The Nevada Division of Environmental Protection (NDEP), Bureau of Water Pollution Control (BWPC) does not have authority for projects occurring on Tribal Lands.

The NDEP, BWPC has received the aforementioned State Clearinghouse item and offers the following comments:

The project may be subject to BWPC permitting. Permits are required for discharges to surface waters and groundwater's of the State (Nevada Administrative Code NAC 445A.228). BWPC permits include, but are not limited to, the following:

- Stormwater Industrial General Permit
- De Minimis Discharge General Permit
- Pesticide General Permit
- Drainage Well General Permit
- Temporary Permit for Discharges to Groundwater's of the State
- Working in Waters Permit
- Wastewater Discharge Permits
- Underground Injection Control Permits
- Onsite Sewage Disposal System Permits
- Holding Tank Permits

Please note that discharge permits must be issued from this Division before construction of any treatment works (Nevada Revised Statute 445A.585).

For more information on BWPC Permitting, please visit our website at:
<http://ndep.nv.gov/bwpc/index.htm>.

Additionally, the applicant is responsible for all other permits that may be required, which may include, but not be limited to:

- | | |
|-----------------------------------|---|
| • Dam Safety Permits | - Division of Water Resources |
| • Well Permits | - Division of Water Resources |
| • 401 Water Quality Certification | - NDEP |
| • 404 Permits | - U.S. Army Corps of Engineers |
| • Air Permits | - NDEP |
| • Health Permits | - Local Health or State Health Division |
| • Local Permits | - Local Government |

Thank you for the information and the opportunity to comment.

[Proposed Action and Purpose and Need, Interrelationships and Coordination with Agencies - 41-01]